

THE CONDOR

A Magazine of Western
Ornithology

Volume XIII

March-April, 1911

Number 2



COOPER ORNITHOLOGICAL CLUB

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Entered as second-class matter February, 1908, at the post office at Los Angeles (Hollywood Station), California, under Act of Congress of March 3, 1879.

Issued from the Office of The Condor, First National Bank Building, Hollywood, Cal.

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Separates of articles in THE CONDOR will be furnished by the Nace Printing Company, Santa Clara, California, at the following uniform rates. All orders for separates must accompany manuscript when submitted to the Editor.

No. of copies	2 pages	4 pages	8 pages	12 pages	Cover and Title, extra
50	\$.90	\$1 .35	\$2 .25	\$2 .70	\$1 .00
75	1 .00	1 .50	2 .40	2 .95	1 .25
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Fig. 18. AN ANCESTRAL EAGLE'S NEST ON THE LLANO WALL

THE CONDOR A MAGAZINE OF WESTERN ORNITHOLOGY.



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THE OASIS OF THE LLANO

By FLORENCE MERRIAM BAILEY

WITH ONE PHOTO

OUR first camp at the foot of the Llano Estacado after a long cold day's drive over the treeless plains was in a warm, sheltered, well-wooded amphitheater at the foot of one of the northward projections of the Llano wall known as Mesa Pajarito, whose bluff rose four hundred feet above the plain. The mesa was appropriately named as far as its amphitheater went, for, protected from the wind and warmed by the afternoon sunshine, it was ringing with the songs of "*pajaritos*", little birds—Mockingbirds and a large supporting chorus.

The trees of the amphitheater, dark solid junipers lightened by delicate green feathery mesquites, were spaced with yucca and tree cactus, one grove of which reached above our heads, and which gave the characteristic arid land touch. We looked at the rich vegetation about us with keen interest, for, lying between the bare plains over which we had come and the bare Staked Plains above us, it seemed a veritable oasis. In matter of fact it was a section of a band of vegetation that encircles part of the Llano separating the two sets of plains, a band of vegetation which owes its existence to the Llano wall. As Dr. Bigelow in his Pacific Railroad report on the botany of the region wrote—"It is to be remarked that the wind blows with tremendous force over these immense denuded plains, and this, we have reason to believe, is one great cause of the destitution of timber in this region. In confirmation of this opinion is the fact that wherever the least shelter by a bluff or rock is afforded, the modest cedar will rear its head, thankful as it were for this partial protection." The Llano wall besides cutting off the wind that has made fires sweep over the plains affords partial shade, broken soil, and more moisture from both snow and rain, thus enabling the ground at its foot to support heavier vegetation and consequently more animal life than the plains.

In the same way a canyon cutting through an arid cactus desert may have its

bed filled with rich deciduous trees and shrubs in which live many birds and mammals unknown to the desert above. This had been the case at one of our earlier camps where cactuses so filled the spaces between junipers that it was hard to escape them, branches of *Opuntia arborescens* pricking you admonishingly on the shoulder as you passed, low white-spined prickly pear sticking needles in your boots, *engelmanni* lending spines for your leggins, and *Mammularias* adding many a stinging touch; while cactus flowers in red, yellow, and magenta offered their glowing tribute along the way. In the canyon that cut through this cactus desert were willows, fresh green cottonwoods, trees draped in woodbine and grapevine—the grapevine adding a fragrant breath—a patch of cat-tails, clusters of brilliant yellow flowers, delicate white cliff roses and—a pair of eastern Phoebes nesting in a niche over one of the numerous water pools!

At Mesa Pajarito at the time of our visit—June 1903—Ash-throated Flycatchers, Woodhouse Jays, Vireos, and Bush-tits, characteristic birds of the juniper country or Upper Sonoran zone, were abundant; while a Roadrunner, being kept in countenance by some mesquite of the Lower Sonoran zone was seen near the top of the cliff. A young family of the delightful Desert Sparrows had just left their nest in a juniper and were being fed by their handsome black-throated parents near by, while an irrepressible brood of Rock Wrens after several alarming encounters with the strangers were led out of sight down a cut bank by their sagacious mother. Blue Crows, the young with only half-grown tails, passing in blue waves through camp were enough to give life and color to the grayest day. Confiding Mourning Doves walked about near the tents, the male showing his beautiful plum-like bloom to great advantage when he puffed out his throat in cooing to his demure brown mate.

A variety of other birds swelled the list, but most in evidence in the amphitheater were the Mockingbirds. There must have been half a dozen pairs, one of which was feeding young in a nest in a cactus close to camp, a nest well protected by its own thorny sticks as well as its thorny supporting branches. A Mocker who sang vociferously until silenced by the third day of rain, was the best mimic I ever heard—he kept me running out of the tent to see familiar birds who were not there. At dark when stentorian Mockingbirds stopped singing, doubtless because they couldn't keep awake any longer, the Poorwills with quiet voices well suited to the evening stillness began to call from the shadows, *poor-wil'-low*, *poor-wil'-low*; and when the darkness of night had silenced them, their places were taken by the Great Horned Owls which in deep-voiced, sonorous tones hooted solemnly to each other from the caverns of the rocky wall. The next day to our surprise we heard the Poor-will, the bird of dusk and dawn, calling at intervals while the sun was shining; but it was probably waked at these unseemly hours by the unaccustomed jangle of the horse bell, for after that it was heard only at its own proper concert hours.

The four hundred foot cliffs of the Llano attracted Cliff Swallows, Sparrow Hawks, Ravens, Eagles, Horned Owls, and Buzzards. Sparrow Hawks were seen from camp feeding young out of the nest, and in climbing the cliff Mr. Bailey found an old three-story eagle's nest, and also a raven's nest from which the young had recently flown. The eagle's nest, on a ledge of the sandstone cliff facing camp, was a massive structure three or four feet high, at least three nests being built one above the other. The ground beneath it told an interesting story. Numerous ejected pellets of rabbit fur, and a variety of small bones strewed the earth. The bones—jaws, skulls, and thigh bones—after critical examination were pronounced those of prairie dog, gopher, jack rabbit and cottontail—rabbit predominating.

Remains of a crawfish and a land turtle were probably attributable to a coon, while skunk tracks added their testimony as to the popularity of this eagle market. Bits of white bone had been carried away by aesthetic wood rats to decorate their nests in the junipers. The raven's nest was evidently an ancestral home, as bushels of old sticks had been thrown down on the ground. It might well have been used for generations, for it was quite inaccessible, about half way up a fifty-foot sandstone wall in a niche under a projecting rock. The old pair, Mr. Bailey reported "croaking and diving and gyrating along the face of the cliff, flying up to the top of the cliff, tilting up; closing their wings, and diving deep into the valley; then up again; then off across the face of the cliff." In another place where two Ravens were seen sailing across the face of the wall, a third, when closely watched proved only a projected shadow—like many of the supposedly dark realities of life.

The Buzzards seen flying around the wall were traced to the old carcass of a sheep. A faint trail led away from the carcass, and a coyote surprised there by the hunters burst out howling so loud that our camp man who was cutting tent pins dropped his saw and ran for his rifle. On investigation the cause of the coyote's excited outburst was explained by the discovery of a den containing young under the rocks not far away.

From Mesa Pajarito we followed along the north wall of the Llano till we came to a headland bluff rising 1000 feet from the plain, shown by the contour map to be the highest point of the Staked Plains. On camping at its foot we could hardly wait to explore the neighborhood, to see what new riches we should find in this green belt between the upper and lower brown plains; for the walls of the Llano were here six hundred feet higher than at the Pajarito amphitheater and promised a correspondingly richer flora and fauna at their base. Our first ornithological discovery had been made when driving into camp, for we were greeted by the loud notes of the Quaker-like Gray Vireo, a bird particularly interesting to find because of its restricted range in the southwest; and afterwards its cheery though jerky song was not only constantly in our ears in camp but often heard among the junipers. Another bird we were delighted to find at our door was the Scott Oriole, that rare musician with exquisite plumage of lemon and black, consistently following out a narrow strip of its native Lower Sonoran mesquite though surrounded by Upper Sonoran junipers and nut pines. A pair of the birds was doubtless nesting near us, but they were so shy they would fly on and on through the junipers when followed. The song of the male, an immature male, suggested the meadowlark's song. His favorite phrase from his rich repertoire heard from camp throughout the day was so curiously accented on the second and fifth syllables that as we went and came through the junipers with it ringing in our ears it phrased itself appropriately—a ju'-ni-per val'-ley, a ju'-ni-per val'-ley, a ju'-ni-per val'-ley.

The first night our list of neighborhood discoveries was swelled by a young family of Baird Wrens just being put to roost—how joyfully the head of the family did sing!—and a Mockingbird with a nest and three handsome blue eggs, a persistent mocker who, as my notes complain, "kept at something morning, noon, and night." Not to be forgotten were the Nighthawks, though they had been booming in the day time about our camps during the entire month since we entered the field.

The next day on a horseback trip when passing through a narrow juniper gulch we found a Black-headed Grosbeak sitting on her nest in a hackberry, an Arkansas Kingbird building in a pocket of a charred juniper stump, and best of all a Gray Vireo brooding her eggs so faithfully that she let me stroke her head on the nest—nothing remarkable for a vireo to be sure, but a heart-warming experience

nevertheless. Besides these there were the Mourning Dove, Say Phoebe, Ash-throated Flycatcher, Richardson Pewee, Woodhouse Jay, the Desert Sparrow, Gray Vireo, Gnatcatcher, and House Finch, one of whose nests was found in a tree cactus. Later, in climbing the thousand foot bluff we found a family of Mexican Falcons near the top.

With the additions these birds made to our Pajarito list and a few others noted between camps there were about forty species. Considering the fact that they were confined to a narrow strip between broad plains on which the list of birds often consisted of two, sometimes of one species, the forty seemed a goodly number. And now, thinking back over towering cliffs enlivened by moving forms and housing ancestral homesteads and of gulches and amphitheaters below ringing with joyous bird songs, this brave little band of forty peopling the juniper belt between silent plains seems to make the real oasis of the Llano.

THE BLUE-THROATED HUMMINGBIRD

By FRANK C. WILLARD

WITH FOUR PHOTOS

AS I wander about among the canyons of the Huachuca Mountains, there are two places where I always listen for a "squeak-squeak-squeak" repeated every few minutes, the second note higher pitched than the first, and the third note lower than either of the other two. These two places are in deep narrow canyons. It was some time before I was able to locate the author of the squeaks. Finally, I located a large hummingbird, perched on a dead twig well up in a fir tree.



Fig. 19. GREENHOUSE IN WHICH NEST OF BLUE-THROATED HUMMINGBIRD WAS BUILT; LOWER TIP OF NEST MAY BE SEEN WITHIN, BETWEEN CENTRAL PAIR OF SLATS, AT TOP

I knew it was not the Rivoli Hummingbird (*Eugenes fulgens*), as its notes were well known to me and are very different. I suspected that it was the Blue-throated Hummingbird (*Coeligena clemenciae*) and one day made sure of it by having one perch close to me as I sat, motionless, on a stone. The dull blue throat (for it looks dull in a shadow) and general dark color identified it readily. A slight movement of mine frightened it. It flew away into the fir tree to its favorite twig, and began to "squeak". This was in 1897.

In July, 1899, I located a nest built in an old Black Phoebe's nest on a rock overhanging a shallow pool. Near here, in May, Geo. F. Breninger had taken a set from a nest built among some ferns growing on a vertical rock. My set consisted of one egg, incubation well along. I attempted to get a photograph of the bird on her nest, but on account of the dense shadow the exposure was not a success.

Although I made repeated efforts I failed to locate another nest until the season of 1910. I made my headquarters at Berner's ranch in Ramsay Canyon. He has a flower and fruit garden, with several small greenhouses for winter use. Hanging from a nail in the roof of one of these was the handle of a lard bucket, and built upon the lower crook was a many-storied hummer's nest, some four inches high. It contained one newly hatched young. The tell-tale "squeaks" of an unseen bird identified my find and by keeping out of sight, and quiet, I was able to get a good look at the female parent. Later I saw very frequently both parents feeding among the flowers and occasionally within arm's length of me. On May 22 I took a photograph of the young one in its nest and judge it was at least a week old at that time. On May 29, I again photographed it and the difference in the length of its bill and the feathers of its wings and tail was very noticeable. On this occasion the youngster fluttered from the nest several times as I was attempting to arrange the camera for the exposure. The next day I left for town and did not get back again until June 16. I at once investigated this nest and found it empty.

During the last few days of my previous visit, I had seen the female in a bunkhouse that had formerly been used as a greenhouse. A piece of baling wire was wound around a nail in a rafter and formed a sort of hook. When I found the young one gone, I went at once to this bunkhouse and found the female sitting on



Fig. 20. EGGS AND NEST OF BLUE-THROATED HUMMINGBIRD, BUILT ON BUCKET-BAIL SUSPENDED FROM CEILING INSIDE OF GREENHOUSE

a completed nest. She flew as I entered the room. I secured a ladder and soon held the nest and two fresh eggs in my hand. Some children were occupying this room so I did not dare leave the nest for further notes. I put another wire up, however, to furnish another nesting site.

June 21, the nest where the young one had been seemed to be receiving additions, and the sides were somewhat built up, but I could not see the birds around. June 25 the nest contained one egg and the next morning there were two. A visitor told me that it was liable to be taken by some small boys who were there, so again I was afraid to leave it for observation and collected the nest and set, first taking a picture of it, showing the eggs. The parent birds seem to be very shy for hummingbirds, particularly around the nest. Unless I was entirely hidden, neither

one would come near, though I could hear the tell-tale squeak first from one point and then from another of the nearby trees and bushes.

There is a small stream which flows through the ranch, and it is crossed by a small foot bridge overhung by a willow and a sycamore. This was a favorite hunting ground of the Blue-throats. About the last bird note heard at night and the first in the morning was the squeak of this hummer coming from this point in the garden.

The long diameter of the eggs is about the same as in those of the Rivoli but the short diameter is a little greater. This may be an individual characteristic of the pair whose nests I took. However, the birds themselves are stouter bodied than the Rivoli and it is natural to expect their eggs to be larger. The nest is made largely of oak blossom hulls, and stems of the same,

with a small amount of plant down intermixed. The whole is well tied together with cobwebs. The nest cavity is shallow and the edges are not incurved, differing in both these respects from the nests of the other hummingbirds with which I am familiar.

The place where I hear the other pair is near no house and I am anxious to locate the nest and learn what the natural nesting site is, man not furnishing a convenient substitute. Many hours of patient watching have failed to reveal it yet, but I live in hopes.



Fig. 21. YOUNG OF BLUE-THROATED HUMMINGBIRD,
MAY 29, 1910



Fig. 22. YOUNG OF BLUE-THROATED HUMMINGBIRD ABOUT TO LEAVE NEST

ODDS AND ENDS

By JOSEPH MAILLIARD

Aix sponsa. Wood Duck. Coming across a small band of Wood Ducks in the fall of 1910, near the junction of the Tuolumne and San Joaquin rivers, reminded me of the fact that it had been many a long day since I had seen one of these birds alive, and that while they used to be plentiful in Marin and Sonoma counties back in the seventies and eighties they are extremely scarce in those regions nowadays. As late as twenty-five years ago it was no uncommon thing to see Wood Ducks scattered in small groups along such a stream as the "Paper Mill" or "Lagunitas" creek in Marin county, or anywhere along the Santa Rosa Laguna in Sonoma county, even where quite a number of people lived in the vicinity and there was a good deal of travel along the streams. Often they were found in small tributaries and diminutive ponds along these waterways. But now, with the country rapidly filling up, and more shooting going on, none are to be met with in these their old and favorite haunts. So it was a great surprise, as well as a pleasure, to come across them again in Stanislaus county this year, the greater surprise for the reason that none were seen in the two previous years during which I have had opportunity to make observations there. This last fall (1910) several were seen on different occasions, one was taken, and one flock of fourteen, mostly males, was flushed from a small laguna among the willow thickets.

Herodias egretta. Egret. In view of the fact that this species was at one time nearly extinct in this state it is encouraging to the advocates of bird protection to note that these egrets are increasing in numbers. There are quite a number to be seen nowadays in the fall and winter in the lowlands and along the sloughs of the San Joaquin River. I have, in fact, seen as many as seven or eight at a time near the junction of the San Joaquin and Tuolumne rivers, and a group of two or three together is no uncommon sight in that locality. The sight of even one of these birds was a rare event for a number of years in most parts of the state, and is so yet in many places where they used to be quite common. In Marin county, for instance, one or two could be found in every small marsh thirty years ago, whereas I have not seen one there for many a long year. As this species has not been definitely recorded from Marin county it might be of interest to state that there is one in our collection shot by myself in January, 1880, as it was flying over our buggy in the outskirts of San Rafael. I was then returning with C. A. Allen from a trip to Pt. San Pedro (Marin County) after a vain search for the Barrow Golden-eye (*Clangula islandica*), some of which he had taken there shortly before. The spot where this egret was shot is now near the heart of the town, and on one of the principal streets.

Egretta candidissima. Snowy Egret. While the Egret (*Herodias egretta*), as noted above, seems to be increasing in numbers, it has not been my fortune to come across any Snowy Egrets for a very long time. In fact the only one in our collection is a male from the vicinity of Sacramento, California, taken in June, 1880. However, the chances are that this species has gained also by the efforts to restrict the slaughter, and probably is to be found in places most suited to it.

Grus canadensis. Little Brown Crane. There are two specimens of the Little Brown Crane in our collection which came to us from Mr. H. B. Kaeding, when we took over his collection on his departure for the Orient some years since. These specimens were purchased in the flesh by him in the San Francisco market, being among several *Grus mexicana* which he had bought at various times in the winter season, and were supposedly shot in the vicinity of Los Banos, California. At any rate they came from somewhere along the San Joaquin River in that part of the state. As records of this species from California seem to be rather meager and unreliable it may be worth while not only to mention these two specimens, but to give their measurements:

♂, Coll. J. & J. W. Mailliard, no. x3226: wing 522.1 (mm.), tail 174.6, culmen from base 101.6, depth of bill at base 24.8, tarsus 199.4, middle toe 72.6, bare portion of tibia 72.6.

♀, Coll. J. & J. W. M., no. x3227: wing 519.2, tail 162.3, culmen from base 93.9, depth of bill at base 22.6, tarsus 211.0, middle toe 79.7, bare portion of tibia 73.1.

As the distinctive difference between these two species is principally a matter of length of the culmen, tarsus and bare portion of the tibia, a comparison of these particular measurements as above given, with the minimum of each as laid down for *G. mexicana* will show that these two individuals are well below the prescribed limitations of *G. mexicana*, and that there can be no doubt as to their identity.

Minimum measurements of *G. mexicana*, according to Ridgway, are: Culmen from base 130.8 mm., tarsus 251.4, bare portion of tibia 116.8.

Piranga ludoviciana. Western Tanager. We have two records of the Western Tanager breeding at low elevations in Sonoma county, California, which may be of sufficient interest to mention here. We have, that is to say, two records, and one nest, but no eggs. A fall of twenty-five to thirty feet proved so damaging to the

shells that they were not worth while preserving. The first nest was found by John W. Mailliard near Mark West Springs, when on a collecting trip through Sonoma county with C. A. Allen. It was in a Douglas spruce, a way out on a horizontal limb. The attempt was made to tie up the limb and saw it off, but the outer end was so heavy that it dropped and spilled out the eggs—a drop of some twenty-five feet. The eggs were three in number and incubation advanced, and the date was May 19, 1884.

The second nest was found by my son and me, at Seaview, near old Fort Ross, on May 17, 1908, when we were on our way to the nest of the Monterey Hermit Thrush (*Hylocichla g. slevini*) mentioned in THE CONDOR, vol. X, p. 134, and was also in a Douglas spruce, about thirty feet from the ground, and twelve or fifteen feet out from the trunk. This limb was straight across a ranch wagon road running through the forest, used often enough to be worth keeping in repair. We endeavored to sling the limb to the one above it, so as to be able to cut it off at the butt and haul it in far enough to reach the nest. But we had nothing with us but a strap or two, suspenders, etc., and the limb was so crooked and badly balanced that it turned over in spite of us, and spilled out the eggs. These were three in number and fresh. The parents were secured for the record. The nest, as was the one mentioned above, was composed principally of "Spanish moss", with a slight exterior framework of fine spruce twigs, mostly forked, among which were mingled a few dry rootlets, and lined with horsehair and some fine rootlets. The main portion of the nest—not considering the loose, surrounding framework of twigs, the ends of which projected out very irregularly to a considerable distance, and confining the limits to the more solid structure of "Spanish moss"—had an outside diameter of 127 mm. and an inside diameter of 73 mm., the depths being respectively 47.5 and 31.6. This shows the nest to be rather a shallow structure, but the main portion quite compact and well built.

Mr. P. M. Silloway, describing a nest of the Western Tanager at Flathead Lake, Montana, says: "It was made of coarse *forky* twigs as an outer framework, * * *. When removed from its site the loose twigs in the outer part of the nest fell away like that part of a grosbeak's nest." And so it was, as far as the exterior framework was concerned, with the nests taken in Sonoma county. But the Montana nest was evidently made, in the main part, of different material. These two Sonoma county nests seem to be very different from that taken in the Sierras and described by C. Barlow in *The Osprey*, Vol. I, p. 6. This difference shows that the Western Tanager is more adaptive to surroundings in the matter of elevation above sea level, and materials for nest construction, than is popularly supposed. Neither of our two records were more than a few hundred feet above sea level, and the one taken at Seaview was within three miles of the Pacific Ocean.

DOVES ON THE PIMA RESERVATION

By M. FRENCH GILMAN

THE doves in this part of Arizona form a most interesting group and even the more luke-warm bird-lovers would be delighted to study them. Their prominence both to eye and ear calls attention to them and though so numerous and common, their absence would leave a big void. The Mourning Dove, *Zenaidura m. carolinensis*, is present in greater or less numbers the entire year, breed-

ing abundantly in suitable places throughout the entire district. The Indian name is Haw'-he and my informant told me in connection with the matter what he considered quite a joke. He was working for a man who asked him the Indian name for the dove and was told correctly. The next day they saw the bird again, and the Indian, wishing to see how well the term was remembered, asked for the name. The white man at once responded "Hé-haw." The Indian laughed heartily as he told the story, and all that day whenever we saw a dove he would say Hé-haw and chuckle.

During November and December they are fewest in number, but in January and February many more arrive, and in the breeding months they are everywhere. Nesting begins the first part of April, my first find being dated April 12, the nest containing eggs partly incubated. Many nests were noted during April, May, June and July, with no attempt made to keep a correct census of them. August 13 was the latest date, and on that day two nests with eggs were seen. Nests were abundant from April 15 till July 15 and in all sorts of situations. One was on the ground under a cotton plant, and others in trees as high as twenty feet from the ground. The average height was seven and a half feet, and extremes were three feet and twenty feet. Mesquite trees being more numerous contained the most nests, though many were found in other growth, such as *Sarcobatus* or greasewood, *Cholla* cactus, willow, *Baccharis*, *Zizyphus* or wild jujube, *Atriplex* or salt bush, *Prosopis* or screw-bean, ironwood, cottonwood, and pear tree. A favorite site was on top of a mesquite stump where the young shoots formed a shade and concealment. The brooding bird as a rule was quite tame on the nest, and generally went through the pretence of being wounded when scared from her home. After the young are grown, small flocks are seen on cultivated fields all fall and winter. The Indians never hunt them and they are quite tame.

The White-winged Dove or Sonora Pigeon, *Melopelia asiatica*, is migratory, arriving here about the 20th of April. Their coming is coincident with the ripening of the berries of the wild jujube, *Zizyphus lycioides*, upon which they feed greedily as long as the fruit lasts, consuming both ripe and green. The Pima term for the bird is Aw-kaw'-kwe. They come in such great numbers that the wheat fields suffer and the loss is considerable. The Indians try to frighten them away from the fields but do not hunt them. Probably they figure that ammunition would count up more on the debit side than would the wheat destroyed. At present there is no closed season and the beautiful birds may be shot whenever present. There was an attempt recently made to have them protected, but such a howl went up from the ranchers that nothing was done. It seems a pity to hunt them during the breeding season, but if we were raising wheat we might look upon the practice with more philosophy. The white color pattern shown when the bird is in flight is quite striking. When perched, the white on the wings is rather inconspicuous, but in motion it shows as two broad crescents, and the white crescent-shaped bar across the tail, generally spread a little in flying, adds greatly in producing the striking effect.

From the day of their arrival in spring they set up a continual call which may be roughly described as Co-co'-o-cok'-co-co'-o.

This call is heard in all directions from morning till night and in such volume that it becomes a sort of continuous bass hum, a background or sounding board for all the other bird songs and calls. It lacks the plaintive tone of the Mourning Dove call, and to most people becomes a dreary monotonous droning which wears on their nerves. Be that as it may, the sight and sound of the bird is part and parcel of the mesquite desert and would be sorely missed. The gunner, in these

birds, has a good test of his skill, as they fly very rapidly with seemingly little effort, and the rate of speed is hard to estimate. They will carry off a large load of shot too, and all things considered are a fine game bird. As soon as the young are grown both they and the parents congregate in large flocks and fly from feeding ground to watering place, thus affording a good chance at wing shooting. One evening in twenty minutes I counted over 700 fly past a bridge over a small irrigating canal.

In addition to the wheat, these doves feed on other grains and much weed seed. They are very fond of sorghum seed, and large flocks gather on a field of this plant. The giant cactus (*Cereus giganteus*) furnishes them a large amount of food also. They may be seen on top of the great columns as soon as the first blossoms appear, thrusting their bills into the trumpet-shaped flowers, but whether for insects, pollen, or nectar was not learned. As soon as the fruit ripens, however, there is no doubt as to what they are seeking. Their actions are a sufficient index even without the tell-tale red stain around their mouths. They frequent the cactus groves as long as any fruit is left, flying a long distance to reach this delicacy.

Besides the danger from gunner, the Cooper Hawk is a menace, feeding often on the fat pigeon. I have seen a Marsh Hawk after a White-wing with a broken wing but do not think any but wounded birds are ever attacked by this species.

Along in August the big flocks begin to grow less, the birds probably scattering out and seeking feeding grounds more distant from the breeding grounds. Toward the first of September they begin to thin out in earnest and by the 15th of the month very few are seen. Individuals may linger a little longer, as in 1909 I saw one as late as October 12, and in 1910 the last seen was on September 25. A few lingered on a sorghum field up till September 10 of this year but were not seen any later.

In April, soon after the birds arrive, I have shot some that looked like young or immature birds. Possibly some individuals may raise a brood before leaving their winter home or these may have been very late hatched squabs of the previous summer. I am inclined to think they were hatched earlier in the season in their southern resort before the northern movement began, as there always seems to be a lot of doves sitting around or flying in small squads who seem to have no family cares. These may be the parents who have already performed their duty.

Nesting begins soon after arrival in the spring and as only a slight platform is built for a nest, not much time is lost in construction. The nest is practically the same as that of the Mourning Dove though perhaps a little larger, as the White-wing is some larger. They nest in a sort of scattered colony, and frequently two and three nests are seen in a large mesquite tree. In some favored groves about every third big tree has one or more nests. Much of the nesting is done in May and June, and in July they are congregated in large flocks. The earliest date I have recorded for eggs was May 10, and at that time a great many new nests were seen. In 1908 and 1909 most of the nesting seemed to be done in May and June, but in 1910 the season reached well into July, as in that month I found twenty-one nests containing eggs or young birds. Possibly nests may have been found in July of the other seasons had I been as assiduous in searching for them. I kept on the lookout during all three years but was particularly on the alert last July, as the previous August I had found a nest with eggs on the 2nd of that month, and I wished to specialize on the late nesting. This August nest contained eggs nearly hatched, and the bird brooding them looked like an immature one, a bird of the year, which possibly was the case.

Nests are always, as far as my observation goes, placed in trees or shrubs at

varying distances from the ground. The average height was ten feet and extremes ranged from four to twenty-five feet. The only nest as low as four feet was built in a mesquite tree and placed on top of an old Thrasher's nest. This may have been a shiftless bird; but I found several others using old Cactus Wren's nests as foundation, and one had made use of a deserted Verdin's home.

The eggs are a little larger than those of the Mourning Dove and lack the pearly luster, the shell looking much like that of the tame pigeon's egg. Two is the usual number in a nest, but July 10 I found a nest containing three partly incubated eggs.

In choice of nesting sites the bird shows a decided preference for mesquite, as about 70 per cent of nests noted were in that plant. About 20 per cent were in willows, and 3 per cent each in cottonwood, *Opuntia fulgida* or tree cholla, and *Prosopis odorata* or screw-bean. *Baccharis gluten* brought up the rear with 1 per cent. The dove is usually very wild on the nest, flying off whenever approached as close as twenty-five feet. Rarely is the broken-wing play made, though I have seen a few mild attempts at it, and occasionally one will allow an approach as close as fifteen feet to the nest before taking flight.

The Mexican Ground Dove, *Chaemepelia p. pallescens*, is a most interesting little fellow in spite of his rather formidable name. He might properly be called the "woo-woo bird," as his note is a single "woo" long drawn out and uttered at short intervals. The sound is very misleading, even to a greater extent than that of the Mourning Dove. The first time I heard it I started to cross a ten-acre field to search for the bird in some trees on the far side. I had gone but a few yards when the dove flew from a fruit tree about three rods away, where he had been the entire time.

These little doves are not very gregarious in this locality, but that may be because they are present only during the breeding season. Three is the most I have seen in a group and that not often. Usually two are together, probably mates. They are rather quiet and the call is not heard often, though this may be on account of their few numbers in this locality. I have seen but seven nests during a residence of three years here, and have not seen very many of the doves. They do not appear to go far from cultivated fields, in fact I have never seen them out on the desert, as is the case with the two larger doves. They are most frequently seen near the river or along irrigating canals, and nest in such locations.

They are absent from this locality during the winter months, usually making their appearance about the middle of March. November 18 is the latest I have seen them but they are rarely seen as late as October 20.

In size they are about like the Inca Dove but may be distinguished in the field by darker coloration and short tail with black outside feathers instead of white. The flight is the same series of jerks as described by Mr. Beebe, who said they jerked themselves through the air. I have never tried to shoot one on the wing, and imagine it would be a serious undertaking if success followed. I have never heard the call given from the ground, but always from a tree or the top of a shrub. They are not very wild but their tameness does not approach the point of familiarity by any means.

The nesting season is late, as the earliest nest found was on July 7 and contained one half-grown young bird. This nest was in a pear tree and placed only two and a half feet from the ground. On July 16, a nest with two young, quarter-grown; July 17, nest and two half incubated eggs; September 3, nest with half-grown young; September 11, young just hatched; September 25, nest with two eggs, advanced incubation; October 8, nest with two nearly fresh eggs. This last

nest I wanted to collect, but the date was so late that I decided to watch and see if the young could hatch and mature. They hatched October 16, but two days later I found both young cold and dead in the nest. Nests ranged from two and a half to twenty-five feet from the ground, with an average of ten feet. In regard to location, two were in cottonwoods, two in pear trees, one in a willow and two in the shrub *Baccharis*.

The nests are fairly well made for doves and are composed mostly of rootlets and small twigs. One nest rather more pretentious than usual was made of rootlets, grass stems and blades, leaf stems with veins attached, small twigs, horse hair and a few feathers. It was compact and fairly well made, with a decided cup in the center measuring nearly an inch deep, and two inches across from rim to rim. One was an old nest re-vamped, and another was merely a superstructure over an old Abert Towhee's nest. The very late date before mentioned was probably the second brood, as the nest was an old one re-lined, possibly a last year's nest, but more likely an earlier nest of the same year.

These doves are rather wild when on the nest and will not allow any familiarity. They rarely show any tendency to use the broken-wing tactics, though one did and made a most realistic performance of it. She fell from the nest when I was about eight feet distant and lay with quivering and beating wings. As I stepped closer she made ineffectual attempts to fly and fluttered along the ground at my feet just out of reach. She kept this up for about fifty yards before taking to flight. I then went on about my business after ascertaining that the nest contained two newly hatched young. Coming back an hour later, I scared her off the nest again and she repeated the performance but in a rather half-hearted way as though she did it from a sense of duty and rather doubted the efficacy of it.

The vivacious little Inca Dove, *Scardafella inca*, is the cream of the dove family and is in the public eye or ear most of the time. Whether sitting on a barbed wire fence or a clothes line, with long tail hanging down perfectly plumb, or marching around in a combative manner with tail erect at right angles to the body, or rushing around busily and hurriedly, not to say greedily, feeding with the chickens in the back yard, it shows a decided individuality and arouses interest and affection. If I could transport to my California home the Bendire Thrashers to sing to me and the Inca Doves to amuse me I would surely do it.

I have never seen them far from dwellings or barns, and even in nesting they show a decided preference for human company. They feed in yards with poultry, perch on back-yard fences, and seem as much part of the establishment as the wood-pile. They are rather dainty in their drinking, rarely using the chicken's drinking vessel, but perching on the hydrant and catching the drops of water as they leak from the pipe. To do this they nearly have to stand on their heads but that does not bother them at all. They eat wheat and other small grains but draw the line at corn, it probably being too large for them to swallow. At our house we always include rations for the Incas when ordering wheat for the poultry.

These little doves are with us the year through and their hard metallic little coo can be heard every month in the year, though most in evidence during the breeding season. As I write this I can hear the "coo-coo" which gives them their Pima name of Coo-coo. The call is much in evidence also during the heat of July and August, at which trying time people with nerves complain of the constant noise they make, which begins early in the morning and ends late in the evening. There is an insistent, persevering quality about the calling that is quite impressive, and when a lot of them keep at it some people sit up and take notice. They are

numerous too, as I have counted more than twenty feeding with about a dozen chickens in a small yard.

The Inca Dove could never have inspired the term "dove of peace", as they are pugnacious to a fault and fight like little fiends. Two of them will face each other with one wing on guard, held straight above the body; then close in and mix it, buffeting with wings till the sound of the blows is audible at a distance of fifty yards. The bill is also used with bloody results about the head. I have been told that one will sometimes kill the other but never saw such an extreme case. When arranging for a fight the combatants utter a sort of growl, if it may be so described: a very guttural, anger-expressing sound. In animated talk, gossip perhaps, they excitedly utter sounds something like "cut-cut-ca-doo-ca-doo". In all, quite a vocabulary is at their command. In motion they are quick and lively, and have the same jerky flight as do the Ground Doves.

The nests of these doves are nearly always placed near a dwelling or a barn. I have never seen a nest more than a hundred yards from a building of some kind, and many of them are as close as they can find a tree in which to build. A row of umbrella trees close to a dwelling has for three years been a favorite place for nests, and also a row of cottonwood trees along the front yard. These two kinds of trees are most frequently used, probably on account of their nearness to houses. Mesquite trees and fruit trees are also drawn on for homesteads. The nest is a little more elaborate than that of the two large doves and shows more of a depression or cup in the center. Rootlets, twigs, grass and leaf stems are materials used in the construction. The birds are generally quite tame on the nest, rarely flying off till the intruder comes closer than arm's length. I have placed my hand as close as ten inches to a brooding bird, but have never quite been able to pet one on the nest. They are so accustomed to human presence that the broken-wing subterfuge is rarely resorted to. The average distance from the ground, of a number of nests was twelve feet and they ranged from seven to twenty feet.

Fighting and cooing begins about the first of February, but the earliest nesting date I have recorded was April 11, when fresh eggs were found. The latest date was September 25, when a nest containing eggs slightly incubated was found. At least two, and possibly three broods are raised during the year. The past season I noted four cases where two broods were raised in the same nest, and two cases where a last year's nest was re-lined and used. Two nests found were built on top of old Cactus Wrens' dwellings.

Though so tame and accustomed to human presence, when caught the doves are violent in their attempts to escape. I trapped two at different times to have a friend take their photograph. I placed them in a cage to await the coming of the camera man but they used the same jerky motions to escape that they do in flying, and went at it with the same vim that they do in fighting. They were fast injuring their heads and I released them after a few minutes.

NOTES ON THE NESTING OF THE FORSTER AND BLACK TERNS IN COLORADO

By ROBERT B. ROCKWELL

WITH SEVEN PHOTOS

FORSTER TERN

THE most beautiful and graceful bird with which our studies of bird life in the Barr Lake region brought us in contact, was the Forster Tern (*Sterna forsteri*). Their clear pearl-gray backs, snowy breasts, black crowns and brilliant orange feet and bills, coupled with the slender wings, deeply forked tail,



Fig. 23. FOUR "FLOATING" NESTS OF THE FORSTER TERN IN THE BARR LAKE REGION OF COLORADO

and graceful easy flight, all set off by a back-ground of deep-blue sky made a never-to-be-forgotten picture. Furthermore the striking contrast between their charming manners when unmolested and their screaming frenzy when excited, made them especially interesting examples of bird temperament. Their peculiar modes of nesting, and the many problems arising from their erratic habits lent further interest to our field work among them; and on the whole these charming birds furnished us with some of our most delightful days afield.*

That these birds nested in Colorado was recognized as early as 1873 by Ridgway (Bull. Essex Institute V, Nov. 1873, 174) who stated that "a few breed in the state, but most of them are merely migrants," and Prof. W. W. Cooke in his "Birds of Colorado" (March 1897) classes them as "Summer Resident, rare." Both of these statements were no doubt true at the time they were written, which was before the day of extensive irrigation projects in Colorado. But through the

* All of the notes on which this paper is based were taken in company with Mr. L. J. Hersey.

construction of numerous large storage reservoirs, with the consequent seepage and marsh land, suitable breeding grounds have increased in number many fold; and in the case of the Barr Lake region at least, these birds are now common summer residents and breeders, and so far as my own observations go I should say that a fair proportion of migrants make this the terminus of their northward migration.

The first appearance of the terns in the spring was about May first; our earliest record was April 27, 1907, on which date a total of fifteen birds was noted, at different points along the Barr chain of lakes. We did not note any extensive migration of these birds immediately following this date, and in fact we did not see any migrating flocks of terns which we did not have good reason to believe were a part of the local breeding colony. However, northward moving flocks might easily have passed through between our weekly visits to the lakes, or during the night.

By May 10, or a few days later, the full quota of breeding birds had apparently arrived, and nest building was begun within a few days. May 11, 1907, the nesting sites had apparently been selected, as the birds made a great commotion when we visited the spot, and the first egg was found May 17.



Fig. 24. THE INJURED FORSTER TERN AND NEST

The nesting site was a large musk-rat "house", standing in the dense cat-tail swamp surrounding a small rush-bound lake. The house which stood in about two feet of water, projected about two feet above the water, and the eggs were laid in a slight cavity among the dry cat-tail stalks composing the house. These nests corresponded exactly in location and construction with those we had examined the preceding year. On this date (June 9, 1906) we examined fifteen nests, all located on musk-rat houses, and containing eggs exhibiting all stages of incubation. The fifteen nests contained one set of six, two sets of five, nine sets of three, and one nest a single egg.

On May 24, 1907, (a week after the first eggs were found) the breeding colony was in full swing, and we were surprised to find a number of nests, containing complete sets, which had been built by the birds upon floating masses of decaying cat-tails.

These structures were all made entirely of dead cat-tail stalks, and while they varied greatly in size and bulk, the general plan of construction was the same in all, being a compact pile of material of irregular outline, apparently floating on the

surface of the water (although in reality the nests were supported by masses of dead cat-tails beneath the surface of the water) and were very conspicuous owing to the lack of concealing vegetation. The eggs were deposited in the center of the pile in a neat depression, which was lined with small bits of the same material. The bottom of the cavity was, in every instance, well above the surface of the water (usually from two to six inches) and the nest cavities were entirely free from moisture. Most of these nests were built in comparatively open water almost waist deep, and about thirty yards from shore.

On the date mentioned (May 24) fifteen nests were examined, about a third of which were constructed by the birds as described, while the remaining two-thirds were the usual depressions, in musk-rat houses. The majority of these nests contained three eggs, but a few of them held only one and two, and one nest contained five.



Fig. 25. CLOSE VIEW OF FORSTER TERN'S NEST SHOWING DETAIL OF NEST CONSTRUCTION; NOTE THE TWO COLOR TYPES OF EGGS, THE TWO IN THE FOREGROUND BEING OF THE DARK BROWN TYPE AND THE THREE IN BACKGROUND OF LIGHTER GROUND-COLOR

This "set" together with all the other sets of five and six examined by us contained eggs of two very distinct types of coloration, one type having a decidedly greenish ground color with small spots and blotches of brown; the other type having a clear brownish or reddish brown ground color, with much larger spots and blotches of very dark brown; and it is altogether probable that the two color types were laid by different birds though in the same nest. In fact after careful observation we came to the conclusion that three eggs composed the maximum set (with rare exceptions) and that nests containing five and six eggs were the depositories of more than one bird. We are at a loss to account for this peculiar feature, as we did not see more than one bird around any one of the nests, and unoccupied nesting sites were abundant upon every hand.

On May 31 the colony contained many more nests than on the preceding week, and the birds were much tamer, several alighting on their nests within twenty yards of us. On June 8 all the nests contained incubated eggs, and on June 15 (1908) and June 9 (1909) we found two nests containing freshly hatched young. June 22 about half of the eggs had hatched, and on the 30th the water in the lake rose sufficiently to flood part of the nests, and many of the unhatched eggs were destroyed.

The young are beautiful little creatures, with a coat of silky down in soft grays and browns. While very young they somewhat resemble chicks, except for their long, sharp bills. They take to the water very readily and their knack of self-concealment is wonderful. With nests on every side of us and a hundred screaming parents circling above our heads, an hour's hard search rewarded us with only four young, although there must have been at least a hundred young ones hiding in the area covered by our search. The young as soon as they can "navigate" are very animated, and show an unusual fear of an intruder. They are also quite pugnacious, babies no larger than a warbler, pecking at an outstretched finger as viciously as a young hawk.



Fig. 26. NEWLY HATCHED YOUNG FORSTER TERNS

On July 6 many of the remaining nests still contained eggs, and one belated set was found July 21, on which date a great many young of the year were on the wing, and the breeding season of 1907 was practically at an end.

The tendency to colonize was apparent wherever we found terns nesting. The fifteen nests found in 1906 were located on musk-rat houses covering a tract of possibly twenty acres, and outside of this area we did not find a single nest. Several of the rat houses supported two nests, and one had three nests containing complete sets. The site of the colony in 1907 was about 300 yards from that of 1906 and covered a somewhat larger space, but the great bulk of the nests (probably seventy-five in all) were in an area of less than ten acres. Four of the floating nests mentioned above were close enough together to permit being photographed at one exposure. (See Fig. 23.)

The birds were at all times extremely demonstrative, rising in a cloud and coming to meet us with loud cries, while we were still a hundred yards or more distant from the nests. The din of their voices would increase as we approached the nests, and (after the young were hatched) when the nests were reached the birds would swoop down on us from quite a height on noiseless wings, and as they

swerved to barely miss our heads would give utterance to a shrill scream, which, coupled with a sudden booming of the wings, was altogether disconcerting. We often had the birds swoop so close to us that we could plainly feel the rush of air from their wings.

A few Black-crowned Night Herons were nesting among the terns, and one unfortunate youngster, unable to fly, who deserted his nest at our approach, took refuge on a tern's nest, where he was promptly attacked by half a dozen of the birds, and although twice as large as his assailants, was knocked down repeatedly, by well directed blows of the birds' wings, until he finally sought safety in the water.

We frequently saw the birds flying about with small fish in their bills, and on one occasion a minnow about two inches long was found in a nest containing young.

We found one unfortunate bird suspended by the neck, between two upright cat-tail stalks, just above the crotch, on which in its frantic efforts to liberate itself it had sawed its neck painfully. Our timely arrival probably saved it from a tragic death, as it was almost exhausted when we liberated it.

BLACK TERN

Also beautiful, and even more interesting to us than the Forster Terns because of the mysterious manner in which their breeding grounds eluded our search were the Black Terns (*Hydrochelidon n. surinamensis*). These dainty little fellows were fully as abundant in point of numbers as the Forster Terns, but although we saw numbers of birds on every trip, careful



Fig. 27. YOUNG FORSTER TERN ABOUT ONE-THIRD GROWN

and thorough searching failed to discover a nest during the breeding season of 1906, and that of 1907 was almost gone, before the coveted prize was discovered.

The birds appeared early in May (May 11, 1907, is my earliest record) and a week later were common. On May 17, 1907, one flock of sixty-five birds was seen (apparently migrants), and on May 17, 1908, two flocks of fully one hundred birds each were observed at the lakes. Soon after arriving the birds would become wonted to some certain pond or lake, and here amid their threatening screams and complaints we would splash through waist deep water by the hour, and plow through acres of soft black ooze, and decaying cat-tails, in a fruitless search for the nests.

Finally on July 5, 1907, after nearly all the rest of the birds had finished their nesting, and after we had about given up hope of finding the Black Terns' nests at all, the happy discovery was made, and I can do no better than to quote from my note-book of that date.

"There were only four Black Terns on the lake, as near as we could tell, and we worked the whole lake over, and then found the nest by coming back to the

first place where the terns had made a demonstration. All the time we were within seventy-five or eighty yards of the nest the birds circled about over us, sometimes poising almost motionless with rapidly beating wings, and continually uttering the characteristic shrill Black Tern cry. We did not see the birds alight a single time, so when we saw one fly up from among the rushes, not more than thirty feet from us, we went to the spot, and there was the nest. It was built on a dense carpet of dead cat-tails, blown over by the wind, forming a smooth, level and perfectly dry mat, upon which the nest and eggs, though small, showed conspicuously, even from a distance of fifteen or twenty feet. The nest proper was very similar to the nests of the Forster Tern though smaller; made entirely of short pieces of dead



Fig. 28. NESTING SITE OF BLACK TERN; EGGS MAY BE SEEN IN LOWER CENTER OF PICTURE

cat-tail blades, rather slightly cupped but compactly built. It was located about ten feet from the low boggy shore, in a sparsely covered spot amongst dense cat-tail growth and over not more than six inches of water."

On May 30, 1908, we were more fortunate, finding two nests within a short distance of each other after a very brief search. The first nest was of the usual construction, and was built on a large circular wooden top of a duck blind, which was floating just at the edge of the cat-tails, in a small rush-bound pond. It contained two eggs and was rendered very conspicuous by its peculiar location. The water at this spot was almost waist deep. Not far away the second nest was found "built on a mass of dead floating cat-tails" and made entirely of dead brown cat-tail blades, fairly well cupped and containing three eggs. In both cases the birds were very noisy and demonstrative, and we quickly located their nests by their actions.

Other work prevented us from observing these nests during the period of incubation and from studying the young, but the appearance and habits of the young birds would in all probability vary but little from those of the young Forster Terns with which we were somewhat familiar.

The most baffling question with which we were confronted was whether or not only a very small part of the summer residents nested. It hardly seems possible that only a few birds of the hundreds seen by us on nearly every trip were breeding, yet on the other hand, it is hard to believe that our careful search over all the most suitable ground, would fail to discover the nests if they were nesting in large numbers.

Our study of the terns was simply one of many illustrations of the wonderful changes of bird distribution brought about by the magic touch of water on what was once a dry, arid prairie.



Fig. 29. CLOSER VIEW OF BLACK TERN'S NEST SHOWING DETAILS OF CONSTRUCTION

SUMMER BIRDS OF WILLOW CREEK VALLEY, MALHEUR COUNTY, OREGON

By MORTON E. PECK

DURING the past summer (1910), the writer spent several weeks, that is, from June 22 to July 25, at Brogan, Malheur County, Oregon. Brogan is as yet a town-site rather than a town, but it promises a considerable growth, as the result of the execution of an extensive irrigating project. It lies in the valley of Willow Creek, twenty-five miles northwest of the town of Vale, about fourteen miles from the Idaho line, one hundred and fifty from the southern boundary of the state, and a little less from the northern.

The study of birds not being the primary object of the visit, only a small amount of territory was covered, though this was looked over with considerable care. Some five miles of the valley of Willow Creek were gone over repeatedly, a trip of about eighteen miles was made up the canyon of the creek, two or three smaller tributary canyons were explored for several miles and visited on two or more occasions, and the sage-brush-covered hills were gone over for four or five miles in various directions from Brogan.

Willow Creek Valley proper begins about two miles above Brogan, where the

stream, which flows in a southeasterly direction, issues from a narrow canyon into a broad drainage basin, from one to several miles in width, with a flood-plain half a mile or more wide. It should be explained, however, that the entire creek is now taken up and held in reservoirs for irrigation. On the north side the land rises by a steep, continuous slope for a distance of several hundred to perhaps a thousand feet, but on the south a series of low hills leads gradually up from the flood-plain to the rim of the valley. Besides the main canyon two or three small tributary canyons enter the valley within the limits covered by our observations; only one of these, however, contains a permanent stream. This is known as Pole Creek, and is very small, in fact quite disappearing in places, where it sinks among the rocks and sand of its bed. The main canyon is from one to several hundred yards in width, with steep, often precipitous walls.

So far as the vegetation of the region is concerned, the flood-plain association of plants is of course sharply marked off from that of the upland or sage-brush section. The former consists largely of a tall rank grass (*Elymus condensatus*), known as rye-grass, together with other grasses, sedges, and rushes, and where the soil is strongly alkaline, of various halophytic species. Certain tall weeds, especially the common sunflower (*Helianthus annuus*) also abound. Along the immediate bank of the creek there is a more or less continuous belt of willow thickets, consisting mainly of shrubby species, commonly not much over fifteen feet in height, but frequently forming a very dense growth. At Brogan, however, there is a tract of some fifteen or twenty acres of what may be designated timber, consisting wholly of willow trees, some of which reach a height of thirty or forty feet and a diameter of twelve or fifteen inches. Among the trees is a dense tangled undergrowth of red osiers, rose bushes and other shrubs, with various rank weeds, especially thistles and nettles, forming all together an almost impenetrable jungle.

In the canyons are considerable thickets of willow, some shrubby birches (*Betula microphylla*), occasional small shad-berry trees (*Amelanchier cusickii*?), and also alders and chokecherries, and numerous clumps of cottonwood (*Populus angustifolia*), the trees sometimes sixteen inches in diameter. Excepting these narrow canyons and the flood-plain of Willow Creek, the whole area over which our observations extended is an almost uninterrupted waste of sage-brush and such other xerophytes as usually accompany it.

It is needless to say that the character of the vegetation constitutes the dominant factor in determining the avian life in each of the sections above indicated. In the flood-plain area birds were not, in general, remarkably plentiful; however, the bit of willow timber displayed an abundance of individuals and variety of species rarely seen surpassed in any section of equal extent. Some idea may be gained of the richness of this locality from an examination of the list which follows. The chief requirements, protection from enemies and from the elements, and an abundant food supply, were here to be met with as nowhere else for miles around. Insects appeared to be remarkably plentiful; one would scarcely find them more so in a tropical forest.

This lower portion of the valley has been in ranches for many years, and a considerable part of it is devoted to alfalfa raising. About the ranch houses are considerable orchards and shrubbery and tall Lombardy poplars, forming a favorite resort for a number of species, which were here found in great abundance. Furthermore, large numbers of Fringillidae were noted in the extensive patches of sunflowers, the seeds of which, when in season, probably formed their principal food. In Willow Creek Canyon birds were found in only moderate numbers, but in the little canyon of Pole Creek both species and individuals were abundant.

The avian life of the dry, sage-brush-covered hills appeared to be in general rather plentiful, though the almost perfect uniformity of conditions would naturally bring the number of species inhabiting this section within narrow limits. The birds of the sage-brush were found to be for the most part very shy,—a result, doubtless, of the continual watchfulness against enemies demanded by the unprotecting nature of their environment.

Aside from the planting of trees on the ranches already mentioned, human agency has to some extent modified the distribution of summer birds in the region under consideration by the construction of reservoirs and irrigation ditches. There are three of these reservoirs, numbered respectively "1", "2", and "3". No. 1 is about two miles from Brogan and some distance to the westward of Willow Creek; No. 3 is in Willow Creek Canyon about eighteen miles above Brogan. Probably several species included in the present list would not have been met with but for the presence of these reservoirs.

1. *Anas platyrhynchos*. Mallard. Four Mallards were seen flying over the valley on July 13. On July 21 a considerable flock was met with in Reservoir No. 1, and the following day several were startled from an irrigating ditch. It is not at all likely that any of these birds had nested in the neighborhood. They were probably wanderers from Lake Malheur or some of the other lakes to the southwestward.

2. *Querquedula cyanoptera*. Cinnamon Teal. A female accompanied by eight very young birds was seen in an irrigating ditch June 28. The parent bird had a broken wing. Near the same place, on July 20, a female and two nearly grown young were observed, and on the following day a considerable flock was seen in Reservoir No. 1. The flock were probably of new arrivals from some other locality.

3. *Ardea h. herodias*. Great Blue Heron. On July 13 a Great Blue Heron was flushed from an irrigation ditch.

4. *Nycticorax n. naevius*. Black-crowned Night Heron. Three specimens were seen flying over the valley on June 24, and on June 29 one was startled from a thicket along Willow Creek. It is likely that a few pair nested in the bit of willow timber near Brogan.

5. *Fulica americana*. Coot. Two Coots were noted in Reservoir No. 1, on July 21.

6. *Lobipes lobatus*. Northern Phalarope. A small flock was noted about Reservoir No. 1, on July 21, and others the following day. One specimen was secured.

7. *Steganopus tricolor*. Wilson Phalarope. A small flock was seen at Reservoir No. 1, July 21.

8. *Gallinago delicata*. Wilson Snipe. On July 8 a Wilson Snipe was flushed from the sage brush! A second specimen was seen in a bog near Reservoir No. 3, on July 10.

9. *Actitis macularius*. Spotted Sandpiper. A pair of Spotted Sandpipers, evidently nesting, were seen at Reservoir No. 1, on July 1. They were observed repeatedly alighting in the tops of the sage brush.

10. *Oxyechus vociferus*. Killdeer. Very abundant along irrigating ditches and about Reservoir No. 1. A female with four half-grown young was noted in Pole Creek Canyon July 16.

11. *Colinus v. virginianus*. Bobwhite. Bobwhites were heard frequently about Brogan, but apparently they are not common.

12. *Centrocercus urophasianus*. Sage Hen. Large numbers of Sage Grouse were observed from time to time and several specimens were secured. About the

middle of July young birds from one-third to nearly full grown were met with. There were usually from five to seven young in a flock. Their hunting at this time of year could offer little sport, as they were almost as tame as domestic fowls. The specimens taken had their crops filled with leaves and young shoots of sage brush and other rank desert plants, but nevertheless they proved excellent table birds.

13. *Zenaidura m. carolinensis*. Mourning Dove. Very abundant, frequenting the sage brush and rocky cliffs by thousands, as well as the willow timber and thickets. It was always most plentiful in the neighborhood of water. Numerous nests were found. In the sage brush they were almost invariably on the ground; in the timber and thickets they were in bushes or even well up in the trees.

14. *Cathartes a. septentrionalis*. Turkey Vulture. Turkey Vultures were very common and seen daily. Good sized flocks were occasionally noted hovering about the "rim-rock" above the valley. They were doubtless nesting here, as a specimen was one day seen to alight and disappear among the rocks.

15. *Circus hudsonius*. Marsh Hawk. A Marsh Hawk was seen on the wing, June 24. A female was killed at Brogan while in the act of carrying away a young chicken.

16. *Buteo b. calurus*. Western Red-tail. A specimen was seen hovering about the cliffs of Willow Creek Canyon, July 7. A few days later a specimen was taken in the willow timber. On July 19 a nest was found near the same place. It was in a willow tree, thirty feet from the ground. There were two young birds, one looking over the edge of the nest, and the other perched beside it.

17. *Falco mexicanus*. Prairie Falcon. Four or five specimens were noted in Willow Creek Canyon, July 10, and another a few days later along Pole Creek.

18. *Falco s. sparverius*. Sparrow Hawk. Sparrow Hawks were very plentiful, especially along watercourses, where specimens were seen daily. Probably the nests were usually in Flickers' holes in perpendicular banks.

19. *Asio wilsonianus*. Long-eared Owl. On two or three occasions adult specimens were observed in the willow timber. July 23, four grown young were flushed in the same locality. They were all sitting close together, but scattered when alarmed.

20. *Otus a. macfarlanei*. MacFarlane Screech Owl. A bird of the year was taken in a willow thicket in Pole Creek Canyon, July 15. Much careful search failed to bring another specimen to light.

21. *Bubo v. pacificus*. Pacific Horned Owl. A young bird, with much down still upon it, was taken among some low trees in Pole Creek Canyon, July 19. When this specimen was shot another, evidently also young, flew from a near-by tree. They must have been reared near the spot, and probably on the flattened top of an old Magpie's nest, several of which were noted in the immediate neighborhood.

22. *Speotyto c. hypogaea*. Burrowing Owl. I was informed that Burrowing Owls had been very plentiful about Brogan earlier in the season, but only a single specimen was seen, June 22.

23. *Coccyzus a. occidentalis*. California Cuckoo. One specimen was seen in the willow timber, July 6.

24. *Dryobates p. homorus*. Batchelder Woodpecker. A single specimen, probably representing this subspecies, was met with in the willow timber, July 14.

25. *Asyndesmus lewisi*. Lewis Woodpecker. A pair of Lewis Woodpeckers were seen near a ranch house, July 9. There were tall Lombardy poplar trees

about the house, where they were probably nesting. On the following day two others were seen some miles up Willow Creek Canyon.

26. *Colaptes c. collaris*. Red-shafted Flicker. Very common along streams, and often seen well out in the sage brush. The perpendicular banks of streams form the usual nesting sites. Two or three nests were found and numerous unoccupied holes noted. One nest was examined June 29, and contained four young birds. The bank had caved a little, so that the heads of the nestlings could be seen from below their level. Only three or four woodpecker's holes were found in trees. One of these had been recently made, and evidently by a Flicker. It seems, therefore, that however long they have been nesting in banks, they will, when opportunity offers, return to their ordinary nesting site. They feed largely on the ground and in low bushes, thus being quite independent of trees.

27. *Phalaenoptilus n. nuttalli*. Nuttall Poor-will. A specimen was seen in the sage brush near Brogan, June 24, and the next day apparently the same bird was taken. One evening on coming in at dusk, one of these birds was flushed, evidently a female with a nest near by. It hovered about me repeatedly, sometimes at a distance of only a few feet, occasionally uttering a low, plaintive cry. I was told that the species had been very plentiful in the spring, but no other specimens were met with.

28. *Chordeiles v. henryi*. Western Nighthawk. Seen daily in large numbers. While found mainly in the sage brush, specimens were seen in willow trees during the day. Several nests were found.

29. *Selasphorus rufus*. Rufous Hummingbird. A Hummingbird was seen in Willow Creek Canyon, July 10, and another in Pole Creek Canyon on the following day.

30. *Tyrannus t. tyrannus*. Eastern Kingbird. Kingbirds did not appear to be very common, though several pair were noted. None were seen in the sage brush, and they probably nest only in the lower portions of the valley.

31. *Tyrannus verticalis*. Western Kingbird. Very plentiful, especially about houses where trees have been planted.

32. *Sayornis sayus*. Say Phoebe. Some half-dozen specimens of this species were seen in all. June 25 an immature bird was killed. All were in the sage brush.

33. *Empidonax d. difficilis*. Western Flycatcher. Moderately plentiful in the willow timber. A nest with four eggs was found June 28.

34. *Empidonax wrighti*. Wright Flycatcher. A pair of these flycatchers were seen in the sage brush, June 29, a second pair July 8, and some days later at least one other pair. No specimens were secured, as they were extremely shy.

35. *Otocoris a. merrilli*. Dusky Horned Lark. A single Horned Lark; probably referable to this subspecies, was seen in the sage brush near Brogan, July 25.

36. *Pica p. hudsonia*. American Magpie. Abundant and seen nearly every day. Some of the nests noted were along dry watercourses in willow bushes not more than two or three feet from the ground.

37. *Corvus c. sinuatus*. Western Raven. Ravens were occasionally observed flying over the valley, but were seldom seen to alight. They were found in much larger numbers some miles up the canyons.

38. *Corvus b. hesperis*. Western Crow. Moderately common along watercourses wherever there are trees.

39. *Dolichonyx oryzivorus*. Bobolink. On July 12, a pair of Bobolinks with a barely fledged young bird were seen in a low meadow near Brogan. On the fol-

lowing day the same pair were again observed accompanied by four or five young.

40. *Molothrus ater*. Cowbird. In the willow timber on July 12, a Yellow Warbler was observed feeding a young Cowbird. The specimen was secured. A few days later, in the same locality, a Redstart was seen feeding another full grown bird of the same species. An adult male, one of a small flock that was following a drove of horses, was killed near Brogan, July 17.

41. *Agelaius tricolor*. Tri-colored Blackbird. There was a considerable breeding colony of this species in a swampy area along the creek near Brogan, but about July 3 they all disappeared. Later numerous specimens were seen, apparently wandering.

42. *Sturnella neglecta*. Western Meadowlark. Abundant everywhere in the sage brush. Always very shy.

43. *Icterus bullocki*. Bullock Oriole. Very plentiful along watercourses and even far out in the sage brush. Several old nests were found in willows and other shrubs, some within a few feet of the ground.

44. *Euphagus cyanocephalus*. Brewer Blackbird. Abundant; usually seen in small flocks along irrigating ditches, and sometimes in the sage brush.

45. *Carpodacus m. frontalis*. California Linnet. Observed now and then in small numbers in low parts of the valley in willow thickets and on sunflowers.

46. *Astragalinus t. pallidus*. Pallid Goldfinch. Plentiful in the lower parts of the valley. It was most frequently noted along irrigation ditches and on cultivated ground.

47. *Poocetes g. confinis*. Western Vesper Sparrow. Quite plentiful in the sage brush, usually loosely associated with other sparrows.

48. *Chondestes g. strigatus*. Western Lark Sparrow. Another species of the sage brush; the most abundant bird, perhaps, of the section.

49. *Spizella breweri*. Brewer Sparrow. Very plentiful in the sage brush. It was usually found in rather large companies, often associated with other Fringillidae, especially when coming to the bottom lands to feed on sunflower seeds.

50. *Amphispiza n. nevadensis*. Nevada Sage Sparrow. Abundant in the sage brush, commonly in scattered flocks.

51. *Melospiza m. montana*. Mountain Song Sparrow. Very abundant in the willow timber, where many pairs were making nests up to the middle of July. A few specimens were observed in Pole Creek and Willow Creek Canyons.

52. *Passerella i. schistacea*. Slate-colored Fox Sparrow. A young bird, fully feathered, was taken in the willow timber, July 18. Several others were noted in the same locality on various dates.

53. *Pipilo m. arcticus*. Arctic Towhee. Moderately common in thickets along watercourses. A female was seen feeding young July 15.

54. *Zamelodia melanocephala*. Black-headed Grosbeak. Not scarce in the willow timber and in the larger thickets throughout Willow Creek Canyon.

55. *Passerina amoena*. Lazuli Bunting. Numerous specimens were noted in thickets along watercourses, especially in Willow Creek Canyon, July 9-10.

56. *Passer domesticus*. English Sparrow. Found in considerable numbers about ranches in the valley.

57. *Piranga ludoviciana*. Western Tanager. Two or three specimens were seen in Pole Creek Canyon, July 18, and one in the willow timber the following day.

58. *Hirundo erythrogastra*. Barn Swallow. Seen in considerable numbers after the middle of July.

59. *Stelgidopteryx serripennis*. Rough-winged Swallow. Moderately common and seen almost daily; apparently nesting in the small canyons.
60. *Lanius l. excubitorides*. White-rumped Shrike. Rather common and seen almost every day in the sage brush.
61. *Vireosylva g. swainsoni*. Western Warbling Vireo. A single male, in song, was seen and secured in Pole Creek Canyon, July 19.
62. *Dendroica a. aestiva*. Yellow Warbler. Abundant in the willow timber. Occasionally seen, but not plentiful, in Pole Creek and Willow Creek Canyons.
63. *Geothlypis t. occidentalis*. Western Yellowthroat. On two occasions a Yellowthroat, presumably representing this subspecies, was heard singing in a thicket at the mouth of Willow Creek Canyon.
64. *Icteria v. longicauda*. Long-tailed Chat. Abundant in all the more extensive willow thickets.
65. *Setophaga ruticilla*. Redstart. On June 30 a pair of Redstarts were seen in the willow timber. On July 14 a female was noted feeding a young Cowbird.
66. *Oreoscoptes montanus*. Sage Thrasher. Common in the sage brush and seen nearly every day.
67. *Dumetella carolinensis*. Catbird. A considerable number of Catbirds, both young and mature, were seen in the willow timber, but none were observed elsewhere.
68. *Salpinctes o. obsoletus*. Rock Wren. Plentiful in canyons and other suitable places. Usually found in families, the young being full grown by July 1.
69. *Troglodytes a. parkmani*. Western House Wren. On June 28 a pair of these birds were seen feeding young in the nest; this was in a woodpecker's hole in a small tree in the willow timber. Two or three other specimens were noted in the same locality and one was secured.
70. *Telmatodytes p. plesius*. Western Marsh Wren. One specimen was taken in a willow thicket, July 23.
71. *Sitta canadensis*. Red-breasted Nuthatch. A bird of the year was taken in the willow timber, July 18.
72. *Penthestes a. septentrionalis*. Long-tailed Chickadee. Two or three families were met with in Pole Creek Canyon, July 1, and subsequently as many more in the willow timber, where one specimen was taken.
73. *Hyllocichla u. swainsoni*. Olive-backed Thrush. Numerous specimens were seen and two or three taken in the willow timber. Many males were in full song up to the middle of July, and nesting was still apparently going on.
74. *Planesticus m. propinquus*. Western Robin. Robins were moderately common in the willow timber, but none were observed elsewhere.

NESTING OF THE CALIFORNIA CUCKOO IN LOS ANGELES COUNTY, CALIFORNIA

By ANTONIN JAY

WITH THREE PHOTOS

HAVING read with much interest the account in the January CONDOR by Mr. Alfred C. Shelton, of the nesting of the California Cuckoo (*Coccyzus a. occidentalis*) in Sonoma County, and noting that some of its habits in that locality are slightly different from what they are here, I will endeavor to give a

summary of my experience on the breeding grounds of the Cuckoo in Los Angeles County.

The bird has always been one of particular interest to me, but for the first few years of my collecting I was never able to locate it or its nest. This I now attribute to the fact that it breeds late, after most of the other birds are through nesting, and that it seems to be, at least in this vicinity, extremely local in its distribution. It may be found breeding commonly in one grove of trees, while in another grove nearby, apparently offering the same advantages for nesting, it may be entirely absent. In the lower part of Los Angeles County, within a few miles of the ocean, are numerous swampy places and river bottoms, which are surrounded by willow timber. Although much of this has been cut away of late years, there still remain some groves here and there, either uncut or second growth, and in these groves we found the Cuckoo at home. The grove in which my brother and myself



Fig. 30. NEST AND EGGS OF CALIFORNIA CUCKOO, NEAR LOS ANGELES, JULY 10, 1910

have found the most nests and have had the best opportunity to observe the nesting habits is near the old town of Wilmington.

Here the willow timber is mostly second growth, and covers an area of perhaps forty acres. It is not as dense as in some groves, and the grass grows luxuriantly affording good pasture for stock. In this grove several pairs of Cuckoos nest every summer.

The birds generally begin nesting about the middle of June, but first sets of fresh eggs may be found as late as the middle of July. The earliest nesting date that I have is of a nest found May 10, 1901, which contained three newly hatched young of the Cuckoo and two badly incubated eggs of the Mourning Dove. The young Cuckoos were dead when found. The Dove was sitting at the time and the construction of the nest showed that it had been built by the Dove. The latest date was of a nest found August 7, 1910. This contained one fresh egg and was undoubtedly a second or third laying.

Eggs are generally deposited daily until the set is complete. This, however, is not always true, and sometimes, as in the case of the cuckoo's big cousin, the Road-runner, fresh, incubated eggs and young may be found in the same nest at the same time. It is a very common thing to find two types of eggs in the same nest, undoubtedly laid by the same bird, part of the set being sharp pointed and the others blunt ended. They also vary considerably in size. The average size of twenty eggs is $.96 \times 1.29$. The largest is 1.02×1.35 , the smallest $.85 \times 1.24$, and a runt measures $.66 \times .87$.

In the majority of cases the Cuckoo builds its own nest, but in some instances it will appropriate an abandoned nest of the Mourning Dove, Black-headed Grosbeak, and possibly other birds. On June 22, 1902, I took two sets of Cuckoo's eggs from old Black-headed Grosbeak's nests. It will also on rare occasions deposit its eggs in a nest already containing those of other birds. The following instances of this occurrence have come to my attention. On July 12, 1903, my brother took a set of Cuckoo's from a Dove's nest which contained three eggs of



Fig. 31. NEST OF CALIFORNIA CUCKOO, JULY 24, 1910

the Cuckoo and one of the Dove; and on July 14, 1907, he found a nest of House Finch containing one egg of the Cuckoo and two of the finch. As no birds were seen near the nest we left it and returned a week later; on this date only the egg of the Cuckoo remained, both eggs of the finch being broken.

The nests as built by the Cuckoos themselves are considerably different from those of the Mourning Dove, both in material and location. They are composed almost wholly of dry willow twigs, lined either with green moss, green willow leaves, or fine straw, and are generally located near the extremity of a branch from three to twenty-five feet from the ground. I have examined over forty nests of the Cuckoo, but have failed to find a single instance where the nest was not built in a willow. I have never seen a nest built by a Cuckoo placed close to the trunk of a tree, in the manner so common to the Dove.

A typical nest measures: outside diameter nine inches, depth four inches; inside diameter three and one-half inches, depth one and one-half inches; it resembles a nest of the Pasadena Thrasher though not so bulky.

The female frequently begins depositing eggs before the nest is finished, and may be seen carrying twigs to it, after the full complement of eggs has been laid. I have not ascertained the exact period of incubation for the Cuckoo but it must be very short. I know of one case where the nest was built, three eggs laid, and incubation about one-fourth, all in a week; this must be admitted to be rapid work. The bird is a close sitter often allowing one to touch her before she will leave the nest. She will then leave as if she was crippled, and flutter along the ground for a short distance, very much like a dove.

The note in the breeding season is a quickly uttered "kuk-kuk-kuk", and is generally given at some little distance from the nest. The birds when in close proximity to the nest are usually silent. If the eggs are taken or destroyed, a second and even a third set will be laid within a very few days. The young when first hatched are naked and look as though they were made of India rubber. They grow very quickly, and I believe if undisturbed two broods are reared in a season.



Fig. 32. YOUNG OF CALIFORNIA CUCKOO, AUGUST 14, 1910

On July 10, 1910, Mr. J. Eugene Law, Mr. G. Willett, my brother and myself, in Mr. Law's auto started out to locate some new breeding grounds of the Cuckoo. We proceeded on the east side of the Los Angeles River until we had gone about sixteen miles south of the city, when we came to several small willow groves, which we started to search. It was not long before we heard the call of a Cuckoo, and Mr. Law soon discovered the nest, which was placed in the top of a slender willow about twelve feet from the ground, and contained three young. The rest of the groves were not very promising so we boarded the auto and made for the old grove, which we reached in a short time.

We had not been there long before I heard Cuckoos calling in several directions. We made for the nearest call, and after a thorough search I located a nest placed in the top of a small willow fourteen feet from the ground. This contained four slightly incubated eggs. I tried to take a photo but it was impossible, so I cut the tree and lowered it about half way down to a better position and took several pictures. I then searched in the direction where another bird was heard calling and in a short time found another nest. This was built in a willow bush about five feet from the ground and contained three badly incubated eggs. The bird was very tame and allowed me to touch her, but when I broke some small limbs which were in the way for the taking of a photo she flew away and did not return, so I was obliged to give up the picture.

I again visited the grove with Mr. Willett on July 24, and about forty feet from where I had found the first nest another was found resembling the first both in situation and construction. I took two photos of this, and we then made our way toward nest number two. Mr. Willett discovered this nest in a willow

about twelve feet from the ground. The contents were remarkable; one newly hatched young, one pipped egg, one fresh egg and one infertile egg. What seems strange to me is that in both of these cases the second set was larger than the first. We took two photos of this nest. I visited it again on August 7, but the young had left. Nearby I found another nest containing one fresh egg, which I believe was a third set from that pair of birds. I also found another nest near nest number one which contained three young and one pipped egg, and was undoubtedly also a third set. I returned again on August 14, but found the nest empty. It was just one week but the young had left. I hunted around the nest and found one of them, very likely the youngest. He was half the size of the old birds, his tail being very short. I took three photos of him.

The largest number of eggs I have found in a nest is five, and this only once. Three is about the average number though sets of two and four are not uncommon.

After the breeding season the Cuckoos spread out through the river bottoms and orchards. At this time the note is very subdued, and nothing like the loud call, as heard on the breeding grounds. The birds keep mostly in the tops of the trees and are very likely to be overlooked.

They leave for their winter home in September, the latest seen being one observed in an orange orchard in Vineland, September 22, 1904. The earliest spring record I have is one seen in the willows along the San Gabriel River at Pico, on May 5, 1907. Although shy birds they do not seem to object particularly to civilization and may be found nesting within a few hundred feet of a ranchhouse or barnyard.

AN APRIL DAY LIST OF CALAVERAS VALLEY BIRDS

By HENRY W. CARRIGER and MILTON S. RAY

THE writers made the trip to Calaveras Valley, Santa Clara County, California, on April 3 of the present year, 1910, primarily for the purpose of visiting what we had been told were extensive breeding colonies of Yellow-billed Magpie. In this, however, we were disappointed. We left Milpitas at half-past three in the afternoon, and after a walk of about twelve miles we reached the northern end of the valley where we spent the night. The next day, after covering a wide area in and around the valley, we returned to Milpitas.

Calaveras Valley presents the usual California foothill country, with oak as the principal timber. Some of the canyons were quite heavily wooded. We found bird life abundant and, as the accompanying list will show, varied as well. Only five birds were found nesting, as the date was early, and these were as follows: Western Red-tailed Hawk, freshly built nests, and eggs well advanced in incubation; Yellow-billed Magpie, only a single occupied nest found, and we did not climb to it; Coast and California Jays, newly built nests of both noted; and Bush-tit, fresh eggs found.

1. *Agelaius vociferus*. Killdeer.
2. *Lophortyx c. californicus*. California Quail.
3. *Zenaidura m. carolinensis*. Mourning Dove.
4. *Cathartes a. septentrionalis*. Turkey Vulture.
5. *Buteo b. calurus*. Western Red-tailed Hawk.
6. *Falco s. sparverius*. Sparrow Hawk.
7. *Otus a. bendirei*. California Screech Owl.

8. *Dryobates nuttalli*. Nuttall Woodpecker.
9. *Melanerpes f. bairdi*. California Woodpecker.
10. *Colaptes c. collaris*. Red-shafted Flicker.
11. *Calypte anna*. Anna Hummingbird.
12. *Tyrannus verticalis*. Western Kingbird.
13. *Sayornis nigricans*. Black Phoebe.
14. *Empidonax d. difficilis*. Western Flycatcher.
15. *Pica nuttalli*. Yellow-billed Magpie.
16. *Cyanocitta s. carbonacea*. Coast Jay.
17. *Aphelocoma c. californica*. California Jay.
18. *Corvus b. hesperis*. Western Crow.
19. *Agelaius ph. californicus*. California Bicolored Blackbird.
20. *Sturnella neglecta*. Western Meadowlark.
21. *Icterus bullocki*. Bullock Oriole.
22. *Euphagus cyanocephalus*. Brewer Blackbird.
23. *Carpodacus m. frontalis*. California Linnet.
24. *Astragalinus ps. hesperophilus*. Green-backed Goldfinch.
25. *Chondestes g. strigatus*. Western Lark Sparrow.
26. *Zonotrichia l. nuttalli*. Nuttall Sparrow.
27. *Zonotrichia coronata*. Golden-crowned Sparrow.
28. *Spizella s. arizonae*. Western Chipping Sparrow.
29. *Melospiza m. santaecrucis*. Santa Cruz Song Sparrow.
30. *Pipilo m. falcifer*. San Francisco Towhee.
31. *Pipilo c. crissalis*. California Towhee.
32. *Tachycineta t. lepida*. Violet-green Swallow.
33. *Lanius l. gambeli*. California Shrike.
34. *Vireosylva g. swainsoni*. Western Warbling Vireo.
35. *Vireo h. huttoni*. Hutton Vireo.
36. *Dendroica a. auduboni*. Audubon Warbler.
37. *Icteria v. longicauda*. Long-tailed Chat.
38. *Wilsonia p. chryseola*. Pileolated Warbler.
39. *Anthus rubescens*. American Pipit.
40. *Salpinctes o. obsoletus*. Rock Wren.
41. *Thryomanes b. spilurus*. Vigors Wren.
42. *Sitta canadensis*. Red-breasted Nuthatch.
43. *Baeolophus i. inornatus*. Plain Titmouse.
44. *Chamaea f. intermedia*. Intermediate Wren-tit.
45. *Psaltiriparus m. minimus*. California Bush-tit.
46. *Regulus c. calendula*. Ruby-crowned Kinglet.
47. *Hylocichla u. ustulata*. Russet-backed Thrush.
48. *Sialia m. occidentalis*. Western Bluebird.
49. *Junco hyemalis*, subsp? Junco.
50. *Ardea h. herodias*. Great Blue Heron.

FROM FIELD AND STUDY

Bobolink Again Noted in Idaho.—In the March-April, 1910, CONDOR, Mr. H. C. Tracy notes the occurrence of the Bobolink (*Dolichonyx oryzivorus*) near Meridian, Idaho, a point about eight miles east of my home ranch. I wish to confirm the presence of the Bobolink in this section by my own observations. In July, 1909, at a place some seven miles west and two miles north of where Mr. Tracy noted the species, I saw a male in full nuptial dress performing his characteristic aerial gyrations close by the roadside, over an alfalfa field, doubtless for the benefit of the brooding female. The bird was scarcely twenty yards away and could not possibly be mistaken for any other species. This single specimen, however, is the only one I have seen in Idaho during a residence of two years.—L. E. WYMAN.

Pinyon Jay at Salem, Oregon.—On December 21, 1910, two specimens of Pinyon Jay (*Cyanocephalus cyanocephalus*) were taken at Salem by Mr. H. S. Peck, and given to the writer for preservation. They were shot out of a flock of six, which had been seen for some time about the same locality. Both were males and in good condition. They had evidently been feeding on the ground, as their feet and plumage were much soiled with reddish clay.—M. E. PECK.

The California Shrike as a Reptile Destroyer.—On May 12, 1910, I was waiting at the isolated station of Bixby, Los Angeles County, when a California Shrike was seen to hover for an instant over an object in the grass across the road, and strike with a vigorous downward thrust, almost immediately returning to its position above, to repeat. As I advanced to find the object of its attention, the bird struck again and arose with a snake in its talons and started off down the road. I shouted and the bird dropped its trailing burden and flew to a nearby telegraph pole. I examined the reptile a moment later and found it to be a specimen of California garter snake, 18½ inches in length, with the neck severed directly behind the skull.—PINGREE I. OSBURN.

The Spotted Owl in Northern California.—On the night of August 28, 1910, Mrs. Clay and myself spent the night in camp on the north branch of Elk River, at a point ten miles a little east of south from Eureka. A maple flat, in the heart of the redwoods, shaded, and right on the edge of a stream, it was a most charming spot to spend a night. Soon after darkness fell over our camp, we were attracted by an odd, nerve-racking noise. It would start in with a kind of long-drawn-out whining, gradually increasing to a more grating sound, which gave rise to uncertain thoughts, as to its source. It first seemed on the hill-side across the creek, then came nearer, all the while increasing in distinctness, and finally seemed to be double, with ever increasing loudness, until the woods seemed uncanny. My curiosity was aroused to a nervous pitch, and I found it hard to induce my wife to follow me with a paper torch. I took my collecting barrel from the twelve gauge and slid in a shell of number sixes. After following in the direction of the noise for some little distance, I located the ghostly racket nearly over my head in a large maple tree. The noise never ceased, but was continually repeated; and save the smooth branches, sparingly tipped with rustling leaves, as they swayed under the strain of the gentle night breeze, nothing could be seen except the twinkling blue background. Finally, I remarked, "It's an owl". A spread of wings was plainly visible now, and right on a bare limb, not over three feet above my head, sat an inquisitive owl with craning neck. Then came another from higher up and perched beside the first. They were attracted by the light, and sat there stretching their necks, with as much curiosity as I had shown, at the sound of a noise that seemed almost panther-like. In a few seconds the collecting tube replaced the number sixes, and after stepping back a few feet, I took aim as best I could and fired. A hurried flapping of wings and a rustling in the branches was none too promising. The number twelve shot were not as effective as I expected, for in a moment everything was still, and not an owl fell to earth.

Early the next morning, I started a systematic search of the nearby trees. After an hour's hunting, both in the brush and on the ground, I cast my eyes on a half-dazed and blinded owl. It proved to be an immature female of the Northern Spotted Owl (*Strix occidentalis caurina*). Although we heard several owls in the night, it was my first experience with the Spotted Owl.—C. I. CLAY.

Early Spring Arrival of Bullock Oriole in Los Angeles.—On January 27, 1911, I was much surprised to see a male Bullock Oriole (*Icterus bullocki*) in a tree in my front yard. On January 30, I also saw a male in the same place. I believe that they were two different birds as the plumage of the second one seen was much brighter than that of the first.—ANTONIN JAV.

Sparrow Notes from Fresno County, California.—In my notes on the Brewer Sparrow in the November-December CONDOR I might have stated that these little sparrows are resident throughout the entire winter, frequenting much the same area as does the Western Vesper Sparrow (*Pooecetes gramineus confinis*). December 26, 1910, I found several *Spizella breweri* in an old weed-grown berry patch that was bordered on the south by a peach orchard and on the other three sides by vineyards. One specimen was taken and is now in my collection. November 20 I observed two Slate-colored Sparrows (*Passerella iliaca schistacea*) and on the twenty-fourth another which was secured. This bird was associated with a large flock of mixed sparrows. The day after Christmas I also found two or three Forbush Sparrows (*Melospiza lincolni striata*) in a large brush pile at the edge of a weedy pasture. One was collected. All these birds were found within a few miles of Fresno.

Mr. Joseph Sloanaker informs me that on the plains near Raisin City, fifteen miles southwest of Fresno, he finds the California Sage Sparrow (*Amphispiza nevadensis canescens*) to be very common during the winter. I have a specimen from there taken December 11, 1910.—JOHN G. TYLER.

Brewer Sparrow Breeding in Simi Valley.—I have found the Brewer Sparrow (*Spizella breweri*) to be a rather common resident of the Simi Valley, Ventura County, and have found many nests containing eggs and young in that vicinity. Two sets of eggs in my collection are as follows: Set of five, fresh, taken with female bird May 21, 1899, and set of three slightly incubated, taken May 28, the same year. The birds are very shy, sneaking from the nest and running through the grass instead of flying; consequently the nests are rather difficult to locate. All the nests that I have found have been on a south slope, sparsely covered with sage brush and cactus, with a thicker growth of smaller plants and shrubs between. The nests were in these smaller shrubs, generally not over a foot above the ground.—J. S. APPLETON.

Notes on Two Birds from Santa Catalina Island, California.—On February 12, 1910, while coasting along the rocks near White's Landing, Catalina Island, I saw and positively identified a Frazar Oystercatcher (*Haematopus frazari*). At first sight of us the bird left its perch on an elbow of crumbling rock and circled toward the boat, but not near enough for a shot. It continued its rapid flight, uttering the familiar call, until it was lost to sight around a dangerous jutting reef. This is the farthest north record according to all available notes that have come under my notice, published or unpublished.

On the day following, an Ancient Murrelet (*Synthliboramphus antiquus*), a rare bird in these waters at any season, was collected from a flock of eight, grouped about one-half mile off shore. The birds were exceedingly shy, and after one first dive of alarm were out of reach. The specimen obtained exhibited ability to swim under water, even after wounded.—PINGREE I. OSBURN.

Blue-winged Teal in Southern California.—The Blue-winged Teal (*Querquedula discors*) has been quite common in the marshes of Los Angeles County this winter up to the present time. I have seen many specimens that were brought in to the local taxidermists by hunters. Although this species has not been considered a common winter visitant to southern California, I think it is safe to say that it is a fairly common visitant during some winters. Other winters, however, it is rare. This irregularity is probably due to meteorological conditions.—G. WILLETT.

THE CONDOR

An Illustrated Magazine
of Western Ornithology

Published Bi-Monthly by the
Cooper Ornithological Club

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Hollywood, California: Published Mar. 28, 1911

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SUBSCRIPTION RATES

One Dollar and Fifty Cents per Year in the United States,
Canada, Mexico and U.S. Colonies, payable in advance
Thirty Cents the single copy.

One Dollar and Seventy-five Cents per Year in all other
countries in the International Postal Union.

Claims for missing or imperfect numbers should be
made within thirty days of date of issue.

Subscriptions and Exchanges should be sent to the
Business Manager.

Manuscripts for publication, and Books and Papers
for review, should be sent to the Editor.

Advertising Rates on application.

EDITORIAL NOTES AND NEWS

A new feature on the agricultural demonstration train conducted by the University of California during the winter months and run over Southern Pacific lines within this state, is a half car devoted to birds and mammals in their economic relations. A series of specimens of the better known species of the state are displayed, together with appropriate captions, charts, etc., intended to give the desired information. Incidentally many things of value are learned from the visitors, record of which is one of the duties of the attendant. This exhibit is in charge of Mr. Harold C. Bryant who has recently been appointed assistant to the State Fish and Game Commission. In the latter service Mr. Bryant is working along economic lines, especially towards securing more satisfactory data in regard to the status of the much discussed meadow-lark.

We are gratified to learn that the preliminary canvass on behalf of the proposed Birds of California has been very encouraging, and that the success of the enterprise is now practically assured. The organization of "The Birds of California Publishing Company" is now being perfected in San Francisco, and more than a score of members of the Cooper Ornithological Club are already enrolled among its stockholders. The artist, Mr. Allan Brooks of British

Columbia, has joined Mr. Dawson at Santa Barbara, and is now engaged in the preparation of the colored plates under the author's direction.

Miss Annie M. Alexander and Miss Louise Kellogg spent the latter half of February and early March in field work in the Trinity mountain region of northwestern California. Their efforts have resulted in the acquisition of important information in regard to the winter bird life of the region. These facts will be placed on record in due course of time. Aside from Price's published observations from the high central Sierras, we have practically no knowledge of what birds occur anywhere above the lower edge of heavy snow. Persistent winter observation in the snow-covered northern and more elevated parts of the state will doubtless disclose the presence of a number of visitants from the far north not now suspected.

The February number of *Bird-Lore* is of unusual interest all the way through. Of particular mention is the series of Christmas bird censuses, over two hundred in number. This feature has proven increasingly attractive as more and wider-separated localities have been represented. The idea of simultaneous observation by amateur bird students everywhere, and the presentation of the reports of these in one place where comparison may be made, was a happy innovation in journalistic ornithology; indeed, it has been so successful that we have more than once seriously considered adopting it in *THE CONDOR*, in a modified form. For various reasons, however, the thought has been abandoned.

The American Museum of Natural History has sent a collecting party to Lower California. The reported object of this expedition is to investigate the fauna of certain heretofore neglected islands in the Gulf of California.

An expedition to the Aleutian Islands, Alaska, is being organized by Messrs. A. C. Bent and L. C. Sanford, also for the purpose of faunistic exploration. The party is to leave in April, and about four months will be devoted to the trip.

Probably no movement of late years has promised so much in the way of stimulation of the growth of the Cooper Club and general interest in ornithology, as the proposed Joint Meeting to be held soon in San Francisco and Berkeley.

A dinner (\$1.50 per plate) and business meeting will take place at the Mint Restaurant, 615 Commercial Street, San Francisco, at 7 p. m., March 31. A scientific program, rich in ornithological delicacies, will be given at South Hall, University of California, Berkeley, Saturday afternoon, April 1, at 3:30. If you will be present at the dinner notify Joseph Mailliard, 1815 Vallejo Street, San Francisco.

It is especially hoped that members living at some distance will attend. The railroads have agreed to extend one and one-third rates to the Pacific Association of Scientific Societies (of which the Cooper Club is a member) provided fifty or more tickets to Berkeley are sold from outside points.

OPEN LETTERS

EXPANSION OF THE A. O. U. CHECK-LIST

Editor THE CONDOR:

I always wondered why the American Ornithologist's Union did not live up to its name and include in the first Check-List all the species of *America*, that is, North America as far as the Isthmus of Darien. Of course I realized that at the time the Mexican boundary was a convenient division line, although merely an arbitrary one, because we fell over it into Lower California without much of any comment.

In looking over the zone map in the new Check-List, we cannot but see how vividly the whole question presents itself. It is only a question of another decade when the very nature of events will demand that our Check-List shall cover all of North America, and not merely a part of it. On the west, including Lower California as we do, we already parallel Mexico nearly half of its length. On the east Florida extends to about the 25th degree, and our country now has permanent possessions among the islands to the south. The Panama Canal Zone is permanently occupied and forms a natural boundary much more definitely than the Mexican line to the north. Ridgway, when he formulated plans for his great work, must have seen the handwriting on the wall, for he includes all this territory. As a forecast of what the future has in store, one has but to note the extensive work that is quietly going on to the south of us. The National Museum, through Nelson and others, has covered an immense section. The Field Museum, through Dearborn and Ferry, has invaded Costa Rica and many of the islands. The American Museum of Natural History is also in the field, as are an immense number of private collectors. Now our government has already taken steps to cover the Canal Zone completely; and this is only the start!

A decade or two ago the American Ornithologist's Union was a pretty small band, with a big proposition, spread out as far as the Pacific, before it. Instead of being satisfied with local growth, as many societies might have been, this same A. O. U. quickly grasped its opportunity and spread during this period until it is powerfully entrenched in every state of the Union. A more loyal group of ornithologists does not exist in the world! It makes one feel that this prompt response to conditions as they arise, will cause the men who have so safely guided the A. O. U. in the past to meet the conditions which are so rapidly shaping for a still further expansion when the next Check-List is published ten years hence. By that time most of the states will have published state lists each giving the status of every species within its boundaries; but a much more comprehensive understanding can be had of our migratory birds, if the territory of the

Check-List include everything north of the natural division at and including the Canal Zone.

What do C. O. C. members think of the proposition as a whole? You know the west has made the A. O. U. sit up and look, more than once. Why can't we start something going along these lines? Of course I haven't brought the facts together properly or fully; but merely touched here and there. I feel, however, that we are fast approaching a point where we can begin to agitate, and within a few years, at most, the whole thing will loom up as a necessity apparent to all.

FRANK S. DAGGETT

Chicago, January 5, 1911

PERSONAL, TO COOPER CLUB MEMBERS:

In accepting the responsibility imposed upon me by the favorable action of the Cooper Club in endorsing my proposal for a cooperative work upon The Birds of California, I do so in full confidence that the members of the Club will really cooperate. Indeed, our very name pledges us to *Cooperation*. While it is true that any leader receives a large amount (often an undue one) of credit for any successful enterprise, it is still more true that all who help have a right to say "*we did it*." That is just what I should wish for "The Birds of California."

If, then, you ask me how you may help, I say: First, by publishing in THE CONDOR those interesting notes you have meant all along to send in sometime. Practically every observer has or has had unique opportunities in the case of several species. Let us hear about these soon, so that the results may be available for assimilation in "The Birds of California."

Then, too, being a bit of a stranger, and having to make the most of five all too brief seasons, I shall appreciate any personal guidance afield which you may care to offer. I shall be especially glad to hear of any unusual photographic opportunities, whether of nesting or flocking birds. Please be patient here. I cannot always rush across the state to photograph a single nest, even though it be a rare one. But if your opportunities "stack up" at a favorable time, or if you are able to mark down something good for another season, it would be a great courtesy to advise me.

Those of you who use the camera are sure to have some choice numbers which ought to appear in "The Birds of California." Don't be bashful. It's your book. On the other hand, if someone else sends in something better for final selection, we know that you won't feel hurt that we cannot use all of your material. We shall all want our book to be the best possible, whoever gets credit for it.

Of course you will let me put the business side of the enterprise up to you at the earliest

favorable moment. This will be a personal matter and we'll get to it all in good time. After that you will be a booster. All your friends know that you are interested in birds. May they not also know that you are interested in the success of the California bird-book? We are going to succeed, of course; but success will mean so much more to us if we can all share it. Thank you.

W. LEON DAWSON

Santa Barbara, February 20, 1911.

PUBLICATIONS REVIEWED

MILLER ON FOSSIL BIRDS OF CALIFORNIA AND OREGON.—Mr. Loye Holmes Miller is continuing his studies upon prehistoric birds, remains of which are becoming available in remarkable quantity through the work of the University of California department of Paleontology under the direction of Dr. John C. Merriam. Since our last notice of Miller's work (CONDOR XII, January 1910, p. 48) three more papers have appeared. In each case the well-chosen title gives a clear idea of the contents of the paper.

The first article deals with the "Wading Birds from the Quarternary Asphalt Beds of Rancho la Brea" (Univ. Calif. Publ. Geol. V, August 5, 1910, pp. 439-448, figs. 1-8). Contrary to expectation wading birds are found to be but poorly represented in the Rancho la Brea beds, located near Los Angeles. But five species have so far been found, and of these only seventeen individuals are represented. Fourteen of these individuals are referred to the subfamily *Ciconiinae*, which is at present foreign to the region. *Ciconia maltha*, not distantly related to the White Stork of the Old World, is described as new. The other member of the subfamily is the Jabiru (*Jabiru mycteria*). Of the cranes (*Gruidae*) both *Grus canadensis*, and a newly described species related to it, *Grus minor*, were found; and of the herons (*Ardeidae*) only *Ardea herodias*.

In the next paper Miller treats of "the Condor-like Vultures of Rancho la Brea" (Univ. Calif. Publ. Geol. VI, November 28, 1910, pp. 1-19, figs. 1 a and 1 b to 5 a and 5 b). The abundance of the remains of these huge scavenging birds is accounted for by the author on the ground that the Quarternary mammalian fauna in this region was abundant, remains of both herbivorous and carnivorous species of large size being numerous in the same beds. The asphalt furnished a trap for these beasts, and the carcasses of these in turn lured the vultures to their doom. The keen senses of the birds, both of sight and of smell, were doubtless effective at great distances, and thus toll was taken from a large area. The relatively large number of vulturine representatives might thus be in part explained. Only one of the four species to which the material is referred exists at the present time; this is the California Condor (*Gymnogyps californianus*),

represented by a series of fourteen fossil tarsi. *Sarcorhamphus clarki* is described as new and most nearly related to the Andean Condor. Quite different from either of the above are *Cathartornis gracilis* and *Pleistogyps rex*, both genus and species being newly named in each case. These are of larger size than either of the existing condors; in fact *Pleistogyps*, because of its great size and the fact that it is represented only by tarsi, while *Teratornis* was described from skull and pectoral girdle, arouses the suspicion that it might, indeed, be identified with *Teratornis*. The author arrives at his decision to the contrary by carefully weighing the various considerations concerned with such a problem. The reader is left impressed with the conclusiveness of the author's argument. All the way through, the present paper is notable for detailed, osteological study and cautious but imaginative inferential reasoning.

The third paper contributes "Additions to the Avifauna of the Pleistocene Deposits at Fossil Lake, Oregon" (Univ. Calif. Publ. Geol. VI, February 4, 1911, pp. 79-87, figs. 1-3). This deposit had been previously pretty thoroughly exploited by Shufeldt. In Miller's paper, three forms are recorded, not mentioned by Shufeldt, and one of these, *Aechmophorus lucasi*, is described as new. A summarized list of all the species of the avifauna is given. This otherwise excellent paper is marred by numerous mis-spelled words, a feature doubtless deplored by all concerned with the publication of the paper, but due to a fortuitous lapse of the pen or mind to which no one appears to be wholly immune.—J. G.

NOTES ON THE PASSENGER PIGEON, by W. J. MCGEE (Science, n. s., vol. XXXII, no. 835, December 30, 1910, pp. 958-964).

It is not at all probable that ornithologists will regard seriously the statement of Mr. McGee that the Passenger Pigeon is still to be found in abundance in southern Arizona, in the extremely arid desert region between Nogales and Yuma. Had the pigeon sought the seclusion of the desert for a respite from incessant persecution, it is at least probable that some one of the numerous collectors that have explored the region would have secured a specimen at some time. Such has not been the case, nor did the naturalists accompanying the United States Mexican Boundary Survey report their occurrence in that region, though in 1894 they visited the exact spot where Mr. McGee claims to have seen the birds (Tinas Altas). As he was quite evidently unable to distinguish between the California and Gambel Quails we are probably safe in assuming that he mistook some other species for the Passenger Pigeon.—H. S. S.

TRACY ON THE "SIGNIFICANCE OF WHITE MARKINGS IN BIRDS OF THE ORDER PASSERI-

FORMES" (Univ. Calif. Publ. Zool. VI, December 1910, pp. 285-312).—Mr. Henry Chester Tracy under the above title adds an unusually important contribution to both fact and theory relative to the general subject of adaptive coloration. The province particularly dealt with is that of so-called directive markings, which term has been employed in explaining a type of coloration where white or light patches are conspicuously contrasted with black or dark areas. This theory, of the directive function of contrasted markings, has recently been unqualifiedly condemned by A. H. Thayer who has been able to see in them only an obliterative, or concealing effect. Tracy defends the directive theory most convincingly, both with argument and an array of fact, the latter derived from field observation of passerine birds. The author under review brings out incontrovertibly the remarkable correlation existing between the possession of *revealing* (a preferred substitute for the word directive) marks, the flocking habits, and use of location notes, in many birds which forage in the open. The significance of this correlation is self-evident.

A fundamental point emphasized by Tracy is the usual association of *motion* with the optimum display of contrasted markings. Perfect quiet on the part of a bird possessing such a pattern might in truth result in obliteration against a checkered background; but quick movement, as when the bird takes flight, brings the same pattern to the instant attention of the observer. In other words the function of concealing might be subserved by the coloration of a bird *at rest*, when the same coloration would render the bird conspicuous *in motion*.

Tracy's attitude throughout is modest and conservative. Although he clearly holds definite views, he presents these always tentatively, giving the reader a fair chance to weigh the evidence pro and con. The paper in hand is well worth careful study by every observer of birds. Data contributory to the solution of problems of this nature are probably to be derived chiefly from observation of the living animal under natural conditions. The devotee of field ornithology will find here one way in which part of his horde of facts can be of use in a large field of philosophic inquiry.—J. G.

BIRDS AND MAMMALS OF NORTHWESTERN COLORADO, BY A. H. FELGER. [The University of Colorado Studies, vol. VII, no. 2, January, 1910, pp. 132-146.]

The report deals mainly with the species seen on an expedition into northwestern Colorado, August 1 to September 4, 1909, but includes as well "those reported on good authority from the region," the birds amounting altogether to 133 species. The annotations relate principally to the manner and place of occurrence of the species observed. Considered as the result of observations made during a

single month the list is a long one; as a list of the birds occurring in that part of Colorado it is evidently incomplete, judging from statements in the introduction. It is hard to tell in which category the author wished it to fall. To the reviewer the practice of including in such publications species which were *not* encountered but which the author believes should occur there seems objectionable. To take a particular instance in the present paper, under *Olororis alpestris leucolaema* the only statement made is that "not a single bird of this common species was seen on the whole trip." If none were seen why is it considered a common species, or why is it entered at all?

The paper will be of undoubted value to any one studying the distribution of birds in Colorado, but such a student will be forced to ignore a number of the records.—H. S. S.

THE TERRESTRIAL | MAMMALS AND BIRDS | OF NORTHEAST GREENLAND | Biological Observations | by | A. L. V. MANNICHE (= Danish Expedition to Northeast Greenland, 1906-1908, vol. V, no. 1; 1910; pp. 1-200, figs. 1-20, pls. I-VII).

For two years the author of the paper under notice was stationed on the northeast coast of Greenland at lat. 76° 46'. The immediate vicinity of his permanent quarters fortunately proved to be surprisingly prolific of animal life, more so than any other parts of the adjacent region which were visited at different seasons by other members of the expedition. Dr. Manniche devoted his attention to a biological study of the neighborhood, and the present report on the eight species of mammals and thirty-eight of birds is proof of close observation and discriminating judgment.

Confining our attention to the portion of the work relating to birds, some 100 pages, we find exceedingly interesting accounts given of the breeding habits of such far northern visitors as the Knot, Sanderling and Ivory Gull. Eggs of the latter two were found. Although no eggs of the Knot were actually secured, close observation of the birds throughout the breeding season was possible. The account of the ptarmigan shows strikingly close agreement with the facts recorded of the Rock Ptarmigan of Alaska. The author shows a clear conception of the molt-processes, until not so very long ago obscurely understood. The courting and nidification of the Red Phalarope is most entertainingly narrated. Those interested in the problem of sexual coloration will find here some facts of significant bearing.

The paper in hand is altogether of a biological and faunistic nature. Although brief descriptive notes on the specimens secured are presented, there is no evidence of close systematic enquiry. The nomenclature is scarcely recognizable from the standpoint of the A. O. U. Check-List, and no attention is given to subspecific distinctions. Thus the ptarmigan is "*Lagopus mutus*", with no reference to *L. rupestris reinhardi*. However, this cannot be emphasized as a fault, when the whole paper is avowedly concerned only with ecology and biography.—J. G.

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For Sale, Exchange and Want Column.—In this space members of the Cooper Club are allowed one notice of about 35 words in each issue free of charge. Books and magazines can be offered for sale or exchange; bird skins and eggs can be offered in exchange, but *not for sale*. Notices must be written plainly, on one side only of a clean sheet of paper. For this department address W. LEE CHAMBERS, R. D. no. 1, Box 73 D, Los Angeles, Calif.

WANTED.—Naturalist, Austin, Tex., I, nos. 2 and 6; The Naturalist, Oregon City, I, no. 12, Nov.-Dec. 1894; Bull. Michigan Orn. Club, V, no. 3; Random Notes on Nat. Hist., I, nos. 1 to 4, II, no. 12, III, 5 to 11. Good prices paid.—DR. WM. C. BRAISLIN, 556 Washington Avenue, Brooklyn, N. Y.

WANTED.—A few good skins of the Prairie Chicken. Offer in exchange California skins and sets.—G. WILLETT, 2123 Court St., Los Angeles, Cal.

CAN you furnish me with any of the following nos: Nidologist, I, 1, 3, 4, 5, 6, 8; Osprey, I, 2, II, 2, 5 to 9 inclusive, 11, 12, III, complete, or all but no. 1, IV, 1 to 10 inclusive, V, 1, 2, 3, 4, 5, 6, 8, 9, 10?—FRED B. MCKECHNIE, Ponkapog, Mass.

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